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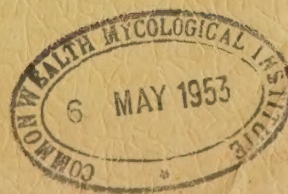
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Studies on the Aerobic Mesophilic Cellulose-Decomposing Bacteria in Japan*: *Sporocytophaga* and *Pseudomonas*

By

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好氣中温性纖維素分解菌について

We have accumulated many strains of aerobic mesophilic cellulolytic bacteria from forest soils, cultivated and uncultivated soils, and garden soils from the Hokkaido district and the eastern part of Honshū. *Sporocytophaga* was the most dominant bacteria in the forest soils. The crude cellulose decomposers which we have obtained reached to three hundred and sixty-two strains in total. Out of them three different strains of *Sporocytophaga myxococcoides* and three new species of *Pseudomonas* were isolated. Moreover, one new species each of *Sporocytophaga* and of *Pseudomonas* were isolated from dung of animals in Ueno Zoological Garden, Tokyo. They were studied taxonomically based on the morphological and physiological properties and their nomenclature were given as follows. Species of *Sporocytophaga* and *Pseudomonas* isolated by authors are as follows.

		Number of Strains.
1. <i>Sporocytophaga ochracea</i> nov. sp.	(Isolated in 1948)	2-1
2. <i>Sporocytophaga myxococcoides</i> α	(" ")	289
3. <i>Sporocytophaga myxococcoides</i> β	(" ")	141
4. <i>Sporocytophaga myxococcoides</i> γ	(" ")	247
5. <i>Pseudomonas rubeolifaciens</i> nov. sp.	(" 1949)	10
6. <i>Pseudomonas viscosissima</i> nov. sp.	(" 1948)	306
7. <i>Pseudomonas albaflava</i> nov. sp.	(" 1949)	233-A
8. <i>Pseudomonas fluorescens</i> var. <i>cellulosa</i>	(" 1948)	107

On *Sporocytophaga*

The genus *Sporocytophaga* was established belonging to Order Myxobacteriales by Stanier⁽¹⁾ in 1942. He suggested that *Sporocytophaga*

* Contributions from Dept. of Agricultural Chemistry, Fac. of Agr., Tokyo University.

myxococcoides Stanier was synonymous with many of the following type of bacteria, *Micrococcus cytophaga* Merker (1912), *Spirochaeta cytophaga* Hutchinson and Clayton (1819), not *Cytophaga hutchinsonii* Winogradsky (1929), *Cytophaga myxococcoides* Krzeminiewska (1933), *Cytophaga globulosa* Stapp and Bortels (1934), *Cytophaga hutchinsonii* Imšenecki and Solntzeva (1940), and *Myxococcus hutchinsonii* Imšenecki (1940). In the sixth edition of Bergey's Manual, this suggestion was adopted and all strains which have spherical microcysts and do not utilize starch were classified as one species, *Sporocytophaga myxococcoides*.

Descriptions of morphological and physiological studies on *Sporocytophaga* isolated by authors are as follows.

Sporocytophaga ochracea Ueda et Ishikawa nov. sp.

Strain No.: No. 2-1 (Isolated in 1948).

Etymology: From Greek, *ochros*, pale yellow.

Vegetative morphology: Cells are long, flexuous rods with rounded ends, 0.5~0.8 by 5~12 microns.*¹ Size of majority is 7~8 microns long. Occurring as single rods generally. No capsules and endospores observed. May be straight, bent, U-shaped or S-shaped. Show creeping motility on solid surface. Stain poorly with ordinary aniline dyes; with Giemsa's, stain, the young cells are colored uniformly except for the tips. Gram stain and acid-fast are negative. Tiny granules observed in rods.

Microcysts: Spherical, 0.5 to 0.9 microns. (See photographs)

On cellulose agar, rounded margin, flat to concave, smooth, homogeneous, slightly brownish later turning to bright yellowish orange, transparent and moist colonies are formed. The edge spreads indistinguishably into surrounding medium. Similar growth is observed on cellulose-dextrin agar*², except for translucent. On bouillon agar, rounded margin, flat to convex with raised center, smooth, homogeneous, pale light brown, and shiny colonies are formed. After 10 days, change to irregularly rounded margin, and radiate but annular ring like colonies. On bouillon agar slant culture, stippled form, convex, coarsely granular, lustrous, moist and abundant growth are observed. On bouillon gelatin stab culture, dish form liquefaction becoming stratiform with pellicle and sediments are observed.

On filter-paper medium*³, pale orange yellow and glistening mucilaginous patches are produced on the part above the surface of liquid. The filter-paper in these regions is eventually completely dissolved and the patches become translucent. In nutrient broth, turbidity in 2 days, sediments and milky white and brittle pellicle in 4 days, are observed. In litmus milk, reduction of litmus begins from bottom to top of the

tube, in 4 days, then, soft, fine and snow-like precipitate formed, with clear zone on the ppt. Litmus almost reduced and shows alkaline reaction.

No growth on starch, glucose and potato medium.

Indole not formed. Hydrogen sulphide formed. Nitrates reduced to nitrites.

Ammonia produced from peptone, but not from nitrates.

Starch not hydrolyzed. Catalase is positive (slightly). Grown up in 3% NaCl solution*¹ Only cellulose and cellulose-dextrin are utilized, among many carbohydrates*⁵ tested.

NaNO_3 , $(\text{NH}_4)_2\text{SO}_4$, NH_4NO_3 , urea, asparagine, peptone, bouillon, yeast-extract and nitrites are utilized as nitrogen source. Strictly aerobic.

Opt. temp. for growth*³: 37°C . Limits of temp.: $22\sim 37^\circ\text{C}$. Death point: $72\sim 75^\circ\text{C}$ for 10 minutes.

Opt. pH for growth*⁵: $6.5\sim 7.5$. Limits of pH: $6.0\sim 9.0$.

Source: Dung from deer of Ueno Zoological Garden, Tokyo.

Sporocytophaga myxococcoides α

Strain No.: No. 289 (Isolated in 1949)

Etymology: Modern Latin from generic name *Mixococcus* and *eidos*, like. Type α .

Vegetative morphology: Cells are long, flexuous rods, with pointed ends (with the aid of the electron microscope, they seem to be rounded ends), $0.4\sim 0.5$ by $3\sim 9$ microns, Size of majority is $4\sim 6$ microns long. Occurring singly generally. No capsules and endospores observed. May be straight, bent, U-shaped. Show creeping motility on solid surface. Stain poorly with ordinary aniline dyes; with Giemsa's stain, the young cells are colored uniformly except for the tips. Gram stain and acid-fast are negative. Tiny granules observed in rods.

Microcysts: Spherical, $0.8\sim 1.0$ microns (See photographs).

On cellulose agar, rounded margin, flat to concave, smooth, homogeneous, slightly brownish later turning to yellowish light brown, transparent and moist colonies are formed. The edge spreads indistinguishably into surrounding medium. Similar growth is observed on cellulose-dextrin agar, except for translucent.

On filter-paper medium, apricot yellow to light cadmium and glistening mucilaginous patches are produced on the part above the surface of liquid. The filter-paper in these regions is eventually completely dissolved and the patches become translucent.

No growth on bouillon, starch, glucose, potato, milk and 3% NaCl medium.

Indole not formed. Hydrogen sulphide not formed. Nitrates reduced to nitrites. Ammonia not produced. Starch not hydrolyzed. Catalase is positive.

Only cellulose, cellulose-dextrin and glucose are utilized, among many carbohydrates tested. From glucose, acid is produced but no visible gas.

NaNO_3 , $(\text{NH}_4)_2\text{SO}_4$, NH_4NO_3 , urea, asparagine, peptone, and nitrites are utilized as nitrogen source. Strictly aerobic.

Opt. temp. for growth: $28\sim 30^\circ\text{C}$. Limits of temp.: $20\sim 30^\circ\text{C}$. Death point: $65\sim 67^\circ\text{C}$ for 10 minutes,

Opt. pH for growth: $7.0\sim 7.5$. Limits of pH: $5.0\sim 9.0$. Habitat: Soil. Source: Forest soil from Hakodate, Hokkaido.

Sporocytophaga myxococcoides β

Strain No.: No. 141. (Isolated in 1949)

Resembles *Sporocytophaga myxococcoides*. Type β .

Vegetative morphology: Cells are long, flexuous rods, with rounded ends, $0.4\sim 0.6$ by $3\sim 8$ microns. Size of majority is $4\sim 5$ microns long. Occurring singly generally. No capsules and endospores observed. May be straight, bent, U-shaped or S-shaped. Show creeping motility on solid surface. Stain poorly with ordinary aniline dyes; with Giemsa's Stain, the young cells are colored uniformly except for the tips. Gram stain and acid-fast are negative. Tiny granules observed in rods.

Microcysts: Spherical, $0.8\sim 1.0$ microns.

On cellulose agar, rounded margin, flat to concave, smooth, homogeneous, slightly brownish later turning to yellowish light brown, transparent and moist colonies are formed. The edge spreads indistinguishably into surrounding medium. Similar growth is observed on cellulose-dextrin agar, except for translucent.

On filter-paper medium, cream buff and glistening mucilaginous patches are produced on the part above the surface of liquid. The filter-paper in these regions is eventually completely dissolved and the patches become translucent.

No growth on bouillon, starch, glucose, potato, milk and 3% NaCl medium.

Indole not formed. Hydrogen sulphide not formed. Nitrates not reduced. Ammonia produced from peptone, but not from nitrates.

Starch not hydrolyzed. Catalase is positive (slightly). Only cellulose and cellulose-dextrin are utilized, among many carbohydrates tested.

NaNO_3 , $(\text{NH}_4)_2\text{SO}_4$, NH_4NO_3 , asparagine, and nitrites are utilized as nitrogen source.

Strictly aerobic.

Opt. temp. for growth: 37°C. Limits of temp.: 20~37°C. Death point: 62~65°C. for 10 minutes.

Opt. pH for growth: 6.0~7.0. Limits of pH: 5.0~8.0. Habitat: Soil.

Source: Field soil from the suburb of Tokyo.

Sporocytophaga myxococcoides γ

Strain No.: No. 247. (Isolated in 1949)

Resembles *Sporocytophaga myxococcoides*. Type γ.

Vegetative morphology: Cells are long, flexuous rods, with pointed ends (with the aid of the electron microscope, they seem to be rounded ends), 0.3~0.5 by 3~7 microns. Size of majority is 4~5 microns long. Occurring singly generally. No capsules and endospores observed. May be straight, bent, U-shaped or S-shaped. Show creeping motility on solid surface. Stain poorly with ordinary aniline dyes; with Giemsa's stain, the young cells are colored uniformly except for the tips. Gram stain and acid-fast are negative. Tiny granules observed in rods.

Microcysts: Spherical, 0.8~1.0 microns.

On cellulose agar, rounded margin, flat to concave, smooth, homogeneous, slightly brownish later turning to yellowish light brown transparent and moist colonies are formed. The edge spreads indistinguishably into surrounding medium. Similar growth is observed on cellulose-dextrin agar, except for translucent.

On filter-paper medium, apricot yellow to light cadmium and glistening mucilaginous patches are produced on the part above the surface of liquid. The filter-paper in these regions is eventually completely dissolved and the patches become translucent.

No growth on bouillon starch, glucose, potato, milk and 3% NaCl medium.

Indole not formed. Hydrogen sulphide not formed. Nitrates not reduced. Ammonia not produced. Starch not hydrolyzed. Catalase is positive.

Only cellulose, cellulose-dextrin and glucose are utilized, among many carbohydrates tested. From glucose, acid is produced, but no visible gas.

NaNO₃, (NH₄)₂SO₄, NH₄NO₃, asparagine, peptone and nitrites are utilized as nitrogen source.

Strictly aerobic.

Opt. temp. for growth: 37°C. Limits of temp.: 22~37°C. Death point: 62~65°C for 10 minutes.

Opt. pH for growth: 7.0~8.0. Limits of pH: 5.0~9.0

Habitat: Soil.

Source: Mud from muddy pool in the suburb of Tokyo.

It is clear that the isolated bacteria belong to Order Myxobacteriales, Family Myxococcaceae, Genus *Sporocytophaga* when referred to Bergey's Manual of Determinative Bacteriology sixth edition (1948), and the two strains viz., strain No. 289 and No. 141 were classified to be varieties of *Sporocytophaga myxococcoides* Stanier. They were named as *Sporocytophaga myxococcoides* α and β respectively. Strain No. 247 was observed to be identical with *Sporocytophaga myxococcoides* Stanier itself, but it was distinguished as *Sporocytophaga myxococcoides* γ from the original Stanier's strain, because in the sixth edition of Bergey's Manual all strains which have spherical microcysts and do not utilize starch were classified as one species, *Sporocytophaga myxococcoides* Stanier. Moreover Strain No. 2-1 is sharply different from *Sporocytophaga myxococcoides* by its abundant growth on bouillon agar and nitrite and ammonium production.

So the authors differentiated it from *Sporocytophaga myxococcoides* and named it *Sporocytophaga ochracea* Ueda et Ishikawa nov. sp. after the colour of mucilaginous patches produced on the filter paper.

From the facts stated above, some consideration, we believe, should be added to the classification of genus *Sporocytophaga*. We propose the classification should be revised as follows.

Genus *Sporocytophaga*

The type species is *Sporocytophaga myxococcoides* (Krzemieniewska) Stanier.

Key to the species of genus *Sporocytophaga*

I. Microcysts spherical.

A. Does not utilizes starch.

1. Grows feebly or not at all on bouillon agar.

Sporocytophaga myxococcoides

a. Produces nitrite from nitrate but no ammonia from peptone.

Sporocytophaga myxococcoides α

b. Produces ammonia from peptone but no nitrite from nitrate.

Sporocytophaga myxococcoides β

c. Produces neither nitrite nor ammonia.

Sporocytophaga myxococcoides γ

2. Grows abundantly on bouillon agar.

Sporocytophaga ochracea

B. Utilizes starch.

Sporocytophaga congregata

II. Microcysts ellipsoidal.

Sporocytophaga ellipsospora

Accumulation media of *Sporocytophaga* and *Pseudomonas*.

A medium.....peptone 0.1%. KH_2PO_4 0.1%, $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ 0.05%,
KCl 0.1%, NaCl 0.05%, and FeCl_3 trace. pH 7.2

B medium..... NaNO_3 0.1% is used instead of peptone. pH 7.2

- *1. Observed by filter-paper-containing medium.
- *2. It was prepared by dissolving water soluble cellulose-dextrin into B medium to 1% concentration. This medium is very adequate for the growth of *Sporocytophaga* and for the maintenance of its cellulose decomposing activity.
- *3. Optimum temp. and pH were decided by the grade of filter-paper decomposed.
- *4. The composition of the medium is as follows. NaCl 27.2g., $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ 1.4g., MgCl_2 3.8g., CaSO_4 1.3g., K_2SO_4 0.9g., CaCO_3 0.1g., MgBr_2 0.08g., $\text{FePO}_4 \cdot 2\text{H}_2\text{O}$ 0.1g., peotone 5.0g., distilled water 1 liter, pH 7.4 with Na_2CO_3
- *5. The concentration of tested carbohydrate was 1%.
- *6. Small rectangle filter-paper was inserted about one-half in B medium in test tube.

On *Pseudomonas*

Isolation of cellulolytic *Pseudomonads* was reported by McBeth (1916)⁽²⁾, Otani (1929)⁽³⁾, and Fuller and Normann (1943)⁽⁴⁾. These bacteria are short rods and have polar flagella. Filter paper above the surface of liquid medium in test tube culture was dispersed into fibril by shaking. The character of cellulose decomposition of these bacteria was not thought to be important to the taxonomical study before, and accordingly most of them were not known to digest cellulose.

According to our investigation cellulose-decomposing activity of *Pseudomonas* gradually disappeared by the repetition of inoculation or by leaving them for a long time on bouillon agar.

The facts that a few description about cellulose-decomposing activity of *Pseudomonas* have been shown in the literature is seemed due to the composition of media for stock culture or its disappearance after repetition of inoculation on bouillon agar.

Description of morphological and physiological studies on cellulolytic *Pseudomonads* isolated by authors are as follows.

Pseudomonas rubeolifaciens Ueda et Ishikawa nov. sp.

Strain No.: No. 10 (Isolated in 1949).

Etymology: From Latin *rubeo*, red or ruddy and *faciens*, make.

Vegetative morphology: Cells are straight rods with rounded ends,

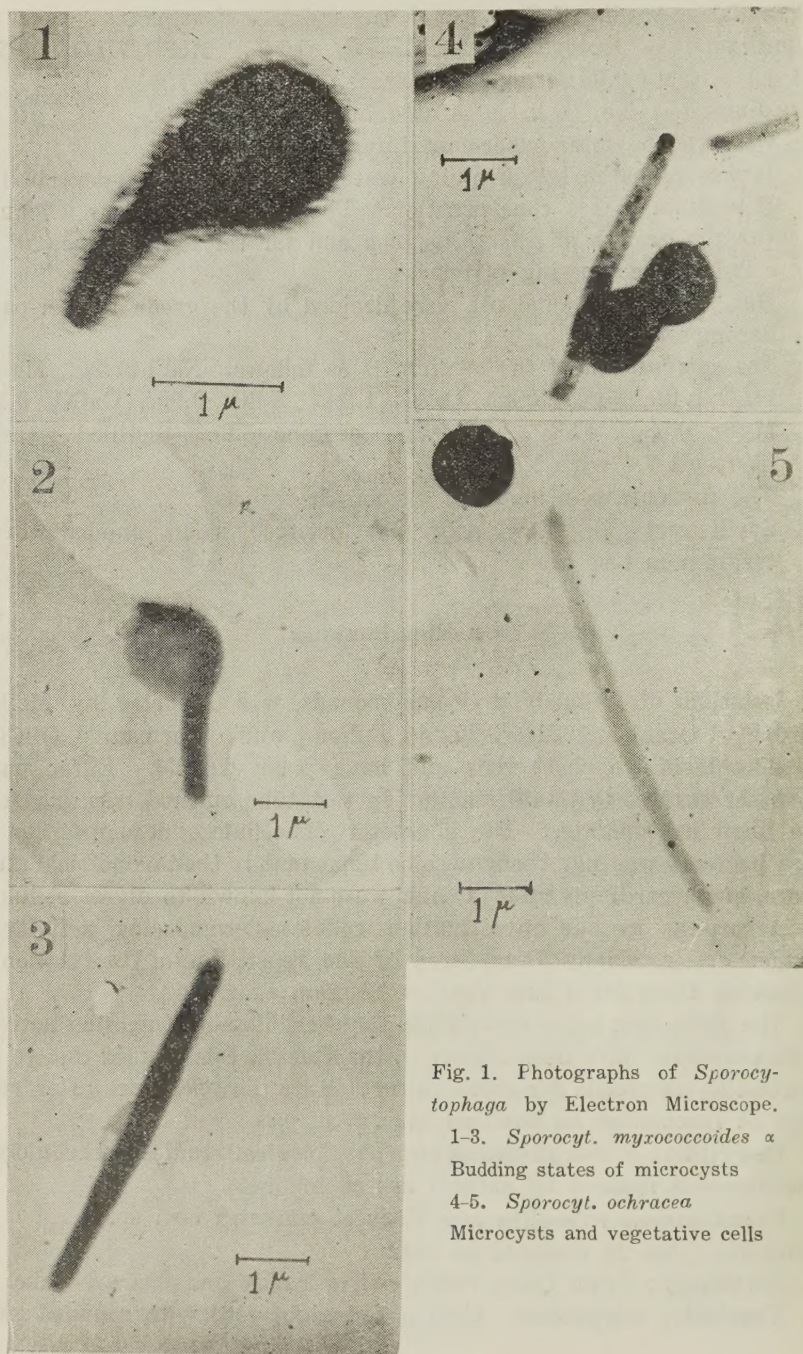


Fig. 1. Photographs of *Sporocytophaga* by Electron Microscope.

1-3. *Sporocyt. myxococcoides* α
Budding states of microcysts

4-5. *Sporocyt. ochracea*
Microcysts and vegetative cells

0.5~0.7 by 1.2~1.8 microns^{*1}. Size of majority is 1.5 microns long. Occurring singly, in pairs and in short chains. No capsules and endospores observed. Show straight- or round-motion with one or two undulate flagella with single pole. Easy staining with basic aniline dyes. Gram-stain and acid-fast are negative. Tiny granules observed in rods.

Irregular forms: In old culture, 0.4~0.5 microns cocci or rarely 1 micron rods observed.

On cellulose agar, rounded margin, flat to concave, smooth, homogeneous, whitish-transparent and moist colonies are formed. On cellulose-dextrin agar^{*2}, rounded margin, flat to concave with echinulate center, smooth, homogeneous, milky white, shiny, translucent and viscid colonies are formed. The medium turns to slightly iridescent. On starch agar, similar growth is shown, except for flat to convex with raised center. On bouillon agar, rounded margin, flat to convex with raised center, smooth, homogeneous, pale yellowish brown, shiny and viscid colonies are formed. On these plate cultures, deep colonies are less to 1 mm; circle or fusiform, except for cellulose agar. On cellulose-dextrin agar slant culture, filiform, convex, smooth, milky white, lustrous, translucent, viscid and abundant growth are observed. The medium turns to iridescent, and condensed water is turbid. On bouillon agar slant culture, filiform, convex, smooth, pale yellowish brown, lustrous, translucent, moist and abundant growth are observed. The medium turns to brown and the condensed water is turbid; On potato, irregular margin, convex, smooth, light ochraceous salmon, lustrous, viscid and abundant growth are observed. Later potato shows pallid purplish gray coloration; On bouillon gelatin stab culture, saccate liquefaction becoming stratiform with pellicle and sediments, is observed.

On filter-paper medium, paper above the surface of liquid shows slightly yellow coloration, and partially translucent. The filter-paper in this part is eventually completely disintegrated and dispersed into fibril by shaking. If organic compounds are used as N-source, the medium becomes cloudy. In nutrient broth, turbidity in 2 days, sediments and milky white, granular and brittle pellicle in 4 days, are observed. In litmus milk, reduction of litmus begins from bottom to top of the tube, in 5 days, then, soft, fine and snow-like ppt. formed, with clear zone on this ppt. Litmus all reduced, shows alkaline reaction.

Indole not formed. Hydrogen sulphide not formed. Nitrates reduced to nitrites. Ammonia produced from peptone, but not from nitrates. Starch hydrolyzed. Catalase is positive. Grown up in 3% NaCl solution^{*4}.

Glucose; mannose, fructose, galactose, cellobiose, maltose, sucrose, lactose, xylose, arabinose, dextrin, glycerin, sorbit, mannit, starch, cellulose-dextrin and cellulose are utilized. Acid produced from glucose, mannose, galactose, cellobiose, maltose, sucrose, lactose, xylose, arabinose and dextrin. Gas not produced from these carbohydrates*⁵.

NaNO_3 , $(\text{NH}_4)_2\text{SO}_4$, NH_4NO_3 , urea, asparagien, peptone, bouillon, yeast-extract and nitrites are utilized as nitrogen source. Facultative aerobic.

Opt. temp. for growth*³: 25~30°C. Limits of temp.: 17~37°C. Death point: 45~50°C. for 10 minutes.

Opt. pH for growth*³: 6.5~8.5, Source: Dung from an ass of Ueno Zoological Garden, Tokyo.

Pseudomonas viscosissima Ueda et Ishikawa nov. sp.

Strain No.: No. 306 (Isolated in 1948).

Etymology: From Latin *viscum*, bird-lime.

Vegetative morphology: Cells are straight rods with rounded ends, 0.4~0.6 by 0.7~1.4 microns. Size of majority is 1.0 micron long. Occurring singly, in pairs and in short chains. No capsules and endospores observed. Show straight- or round-motion with single polar flagellum. Easy staining with basic aniline dyes, Gram-stain and acid-fast are negative. Tiny granules observed in rods.

Irregular forms: In old culture, 0.4~0.5 microns cocci observed.

On cellulose agar, rounded margin, flat to concave, smooth, homogeneous, whitish-transparent and moist colonies are formed. On cellulose-dextrin agar, rounded margin, flat to concave with echinulate center, smooth, homogeneous, milky white, shiny, translucent and viscid colonies are formed. On starch agar, similar growth is formed, except for flat to convex with raised center. On bouillon agar, rounded margin, flat to convex with raised center, smooth annular ring like, pale yellowish-buff, shiny and viscid colonies are formed. On these plate cultures, deep colonies are less to 1 mm, circle or fusiform, except for cellulose agar. On cellulose-dextrin agar slant culture, filiform, very convex, smooth, pale chalcedony yellow, shiny translucent, very viscid and abundant growth are observed. Condensed water is turbid. On bouillon agar slant culture, filiform, convex, smooth, pale yellowish-buff, shiny, translucent, viscid and abundant growth are observed. Condensed water is turbid. On potato, filiform, very convex, smooth, pale ochraceous salmon, glistening, viscid and abundant growth are observed. Later potato turns to gray. On bouillon gelatin stab culture, infundibuliform liquefaction becoming stratiform with pellicle and sediments, are observed.

On filter-paper medium, paper above the surface of liquid shows slightly yellow coloration, and partially translucent. The filter-paper in this part is eventually completely disintegrated and dispersed into fibril by shaking. If organic compounds used as N-source, the medium becomes cloudy. In nutrient broth, turbidity in 24 hrs, sediments and milky white, homogeneous and hard pellicle in 3 days, are observed. In litmus milk, reduction of litmus begins from bottom to top of the tube, in 4 days, then, soft, fine and snow-like ppt. formed, with clear zone on this ppt. Litmus almost reduced, shows alkaline reaction.

Indole not formed. Hydrogen sulphide not formed. Nitrates reduced to nitrites. Ammonia produced from peptone, but not from nitrates. Starch hydrolyzed. Catalase is positive. Grown up in 3% NaCl solution.

Glucose, mannose, fructose, galactose, cellobiose maltose, sucrose, lactose, xylose, arabinose, dextrin, glycerin, sorbit, mannit, starch, cellulose-dextrin and cellulose are utilized. Acid not produced from these carbohydrates. Gas produced from glucose, mannose, fructose, galactose, maltose, sucrose, lactose, xylose, arabinose, dextrin, sorbit and mannit.

NaNO₂, (NH₄)₂SO₄, NH₄NO₃, urea, asparagin, peptone, bouillon, yeast-extract and nitrites are utilized as nitrogen source.

Facultative aerobic.

Opt. temp. for growth: 25~28°C. Limits of temp: 10~30°C. Death point: 45~50°C. for 10 minutes.

Opt. pH for growth: 6.0~7.0 Limits of pH: 5.0~9.0

Habitat: Soil.

Source: Forest soil from Inokashira Park, Tokyo.

Pseudomonas alboflava Ueda et Ishikawa nov. sp.

Strain No.: No. 233-A. (isolated in 1949).

Etymology: From Latin *albus*, white and *flavus*, yellow.

Vegetative morphology: Cells are straight rods with rounded ends, 0.3~0.5 by 1.8~3.0 microns. Size of majority is 2.0~2.5 microns long. Occurring singly in pairs and in short chains. No capsules and endospores observed. Show straight- or round-motion with single polar flagellum. Easy staining with basic aniline dyes. Gram-stain and acid-fast are negative. Tiny granules observed in rods.

Irregular forms: In old culture, 0.3~0.5 by 1.5~1.3 microns rods observed.

On cellulose agar, rounded margin, flat to concave, smooth, homogeneous, whitish-transparent and moist colonies are formed. On cellulose-dextrin agar, rounded margin, flat to concave with echinulate

center, smooth, homogeneous, yellowish white, shiny, translucent and viscid colonies are formed. On starch agar, similar growth is shown, except for flat to convex with raised center. On bouillon agar, rounded margin, flat to convex with raised center, smooth, homogeneous pale yellowish-buff, shiny, and viscid colonies are formed. On these plate cultures, deep colonies are less to 1 mm. circles or fusiform, except for cellulose agar. On cellulose-dextrin agar slant culture, filiform, very convex, smooth, pale dull green yellow, lustrous, translucent, viscid and abundant growth are observed. Condensed water is turbid. On bouillon agar slant culture, filiform, convex, smooth, pale yellow-buff, lustrous, translucent, viscid and abundant growth are observed. Condensed water is turbid. On potato, filiform, very convex, smooth, cinnamon buff to pinkish buff, glistening, viscid and abundant growth are observed. Later potato turns to gray. On bouillon gelatin stab culture, stratiform liquefaction with pellicle and sediments is observed.

On filter-paper medium, paper above the surface of liquid shows pinard yellow coloration, and partially translucent. The filter-paper in this part is eventually completely disintegrated and dispersed into fibril by shaking. If organic compounds are used as N-source, the medium becomes cloudy. In nutrient broth, turbidity in 24 hrs., sediments and milky white, homogeneous and hard pellicle in 3 days, are observed. In litmus milk, reduction of litmus from bottom to top of the tube, in 3 days, then, soft, fine, and snow-like ppt. formed, with clear zone on this ppt. Litmus almost reduced, shows alkaline reaction.

Indole not formed. Hydrogen sulphide not formed. Nitrates reduced to nitrites. Ammonia produced from peptone, but not from nitrates. Starch hydrolyzed. Catalase is positive. Grown up in 3% NaCl solution.

Glucose, mannose, fructose, galactose, cellobiose, maltose, sucrose, lactose, xylose, arabinose, dextrin, glycerin, sorbit, mannit, starch, cellulose-dextrin and cellulose are utilized. Acid and gas not produced from these carbohydrates.

NaNO_3 , $(\text{NH}_4)_2\text{SO}_4$, NH_4NO_3 , urea, asparaginepe ptone, bouillon, yeast-extract and nitrites are utilized as nitrogen source. Facultative aerobic.

Opt. temp. for growth: $22\sim 28^\circ\text{C}$. Limits of temp.: $10\sim 30^\circ\text{C}$. Death point: $45\sim 50^\circ\text{C}$. for 10 minutes.

Opt. pH for growth: $7.0\sim 8.0$ Limits of pH: $5.5\sim 8.0$

Habitat: Soil.

Source: Mud from ditch of Toyama-Ken.

Pseudomonas fluorescens Migula var. *cellulosa* Ueda et Ishik. nov. var.

Strain No. : No. 107 (Isolated in 1848).

Etymology : From chemical term, cellulose.

Vegetative morphology : Cells are straight rods with rounded ends, 0.5~0.7 by 1.2~3.0 microns. Size of majority is 1.5~1.8 microns long. Occurring singly, in pairs and in short chains. No capsules and endospores observed. Show straight- or round-motion with single polar flagellum. Easy staining with basic aniline dyes. Gram-stain and acid-fast are negative. Tiny granules observed in rods.

Irregular forms : In old culture, 0.3~0.5 by 0.8~1.2 microns rods observed.

On cellulose agar, rounded margin flat to concave, smooth, homogeneous, whitish-transparent and moist colonies are formed. On cellulose-dextrin agar, rounded margin, flat to concave with raised center, smooth, homogeneous, milky white, translucent and moist colonies are formed. The medium, concentric circles of colonies, show fluorescent bluish green to yellowish green coloration. On starch agar, similar growth is shown, except for flat to convex with raised center. On bouillon agar, rounded margin, flat to convex with raised center, smooth, homogeneous, pale yellowish-brown, shiny and viscid colonies are formed. On these plate cultures, deep colonies are less to 1 mm. circle or fusiform, except for cellulose agar. On cellulose-dextrin agar slant culture, filiform, convex, smooth, milky white, lustrous, transparent, viscid and abundant growth is observed. The medium and turbid condensed water, show very beautiful fluorescent bluish green to yellowish green coloration. On bouillon agar slant culture, filiform, convex, smooth, pale yellowish-brown, lustrous, translucent, moist and abundant growth, is observed. Condensed water is turbid and the medium turns to brown. On potato, filiform, convex, smooth, pinkish cinnamon to cinnamon buff, lustrous, viscid and abundant growth is observed. Later potato turns to gray. On bouillon gelatin stab culture, crateriform liquefaction, becoming stratiform with pellicle and sediments, is observed.

On filter-paper medium, paper above the surface of liquid shows slightly yellowish green coloration, and partially translucent. The filter-paper in this part is eventually completely disintegrated and dispersed into fibril by shaking. Liquid shows yellowish green coloration, and if organic compounds are used as N-source, becomes cloudy. In nutrient broth, turbidity in 2 days, sediments and milky white, rugose and brittle pellicle in 3 days, are observed. In litmus milk, reduction of litmus begins from bottom to top of the tube, in 5 days, then, soft, fine and snow-like ppt. formed, with clear zone on this ppt. Litmus all reduced, snows alkaline reaction.

Indole not formed. Hydrogen sulphide not formed. Nitrates reduced to nitrites. Ammonia produced from peptone, but not from nitrates. Starch hydrolyzed. Catalase is positive. Grown up in 3% NaCl solution.

Glucose, mannose, fructose, galactose, cellobiose, maltose, sucrose, lactose, xylose, arabinose, dextrin, glycerin, sorbit, mannit, starch, cellulose-dextrin and cellulose are utilized. Acid not produced from these carbohydrates. Gas produced from fructose, galactose and dextrin.

NaNO_2 , $(\text{NH}_4)_2\text{SO}_4$, NH_4NO_3 , urea, asparagine, peptone, bouillon, yeast-extract and nitrites are utilized as nitrogen source.

Facultative aerobic.

Opt. temp. for growth: 37°C . Limits of temp.: $17\sim47^\circ\text{C}$. Death point: $50\sim55^\circ\text{C}$ for 10 minutes.

Opt. pH for growth: $7.0\sim9.0$ Limits of pH: $6.0\sim9.0$

Habitat: Soil.

Source: Field soil from Saitama-ken.

From the standpoint of cellulose-decomposing characters of newly obtained four strains of *Pseudomonas*, we could more easily place them in suitable position if the subdivision was set in the key of the species described in Bergey's Manual of Determinative Bacteriology sixth edition (1948). We propose to insert the subdivision on cellulose-decomposing activity in the classification of genus *Pseudomonas* and thus improve the key as follows.

Key to the species of genus *Pseudomonas*.

- I. Soil and freshwater forms with a few that are pathogenic on cold or warm blooded animals.
 1. Green fluorescent pigment produced.
 - a. Gelatin liquefied.
 - b. Polar flagellate.
 - c. Grow readily at 37°C . Usually bluish-green.
 - d. Not known to digest cellulose or not reported.
Pseudomonas aeruginosa.
Pseudomonas jaegeri.
 - dd. Digest cellulose.
Pseudomonas fluorescens var. *cellulosa*
 - cc. Grow poorly or not at all at 37°C .
 - d. Milk not coagulated becoming alkaline
 - e. Soil and water organisms. Not known to digest cellulose
Pseudomonas fluorescens, etc.
 2. Green fluorescent pigment not produced or not reported.
 - a. Gelatin liquefied.
 - b. Polar flagellate.
 - c. Grow poorly or not at all at 37°C . No visible gas from sugars.
 - d. Rapid reduction litmus. Putrid odor,

- Pseudomonas putrefaciens.*
- dd. Slow reduction litmus. Alkaline.
- e Not known to digest cellulose or not reported.
- Pseudomonas mephitica.*
- Pseudomonas geniculata.*
- ee. Digest cellulose.
- Pseudomonas alboflava.*
- Pseudomonas rubeorifaciens.*
- ddd. Acid coagulated.
- Pseudomonas fragi.*
- cc. Acid and visible gas from glucose. Optimum temperature variable.
- d. Litmus milk reduced and alkaline.
- Pseudomonas nebulosa.*
- dd. Litmus milk acid coagulated.
- Pseudomonas coadunata.*
- etc.
- ccc. Visible gas but not acid from glucose, and digests cellulose.
- Pseudomonas viscosissima.*

Fluorescent cellulolytic *Pseudomonas*, strain No. 107, which was isolated by authors is almost similar to *Pseudomonas fluorescens* morphologically and physiologically with the exception of important characters which decomposes the cellulose and readily grows at 37°C. We considered that this strain is a variety of *Pseudomonas fluorescens*, and named *Pseudomonas fluorescens* var. *cellulosa*.

Growth temperature is the important key to the classification of *Pseudomonas*, in soil and water forms, in Bergey's Manual, therefore, we could not place this bacteria in the group which grow poorly or not at all at 37°C, and were compelled to give a place in the group which grow readily at 37°C.

Pseudomonas viscosissima does not produce acid but produces visible gas from glucose, so we set up a new clause (ccc) and divided it from the group which produce acid and gas from glucose.

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Is *Trichocoma paradoxa* conspecific with *Penicillium luteum*?

By Kiyosi KOMINAMI, Yosio KOBAYASI
and Keisuke TUBAKI

小南 清, 小林義雄, 椿 啓介: マユハキタケは
ペニシリウム・ルテウムと同種か?

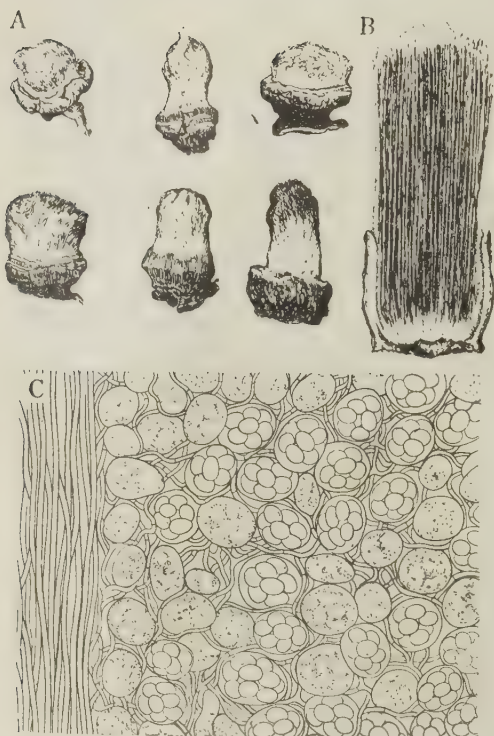


Fig. 2 *P. paradoxa* A. Fruitbodies
B. Longitudinal section of fruitbody
C. Section of ascigerous tissue

*Trichocoma paradoxa** is a monotypic genus established by Junghuhn in Java (1839) and has first been ranked by him among Hyphomycetes of Fungi Imperfecti, before Massee has designated it as a member of new group Gastrolichenes in understanding that the appearances of the clusters of asci containing ascospores are much the similar to some members of algae of genus *Botryococcus* and that it was a sort of lichenes. In present days this is ranked among Plectascales of Ascomycetes. Members of order Plectascales are known mostly of fungi exhibiting no macroscopic fruitbodies, excepting few mushrooms as *T. paradoxa*, and consequently, are thought to be most primitive group

* *Trichocoma paradoxa* Jungh., Praemissa in Floram cryptogamicam Javae insulae, in Verhandelingen van het Bataviasche Genootschap XVII: 9 fig. 7 (1839); Massee in Philos. Trans. Royal Soc. London CLXXVIII: 305 (1887); Fischer in Hedw. VII: 161 pl. 3 (1890); Sacc. Syll. Fung. X: 82 (1892); Yasuda in Bot. Mag. Tokyo XXXVII: 136 (1923); Asahina in Journ. Jap. Bot. III: 50-54 ill. (1926); Boedijn in Ann. Jard. Bot. Buitenzorg XLIV: 246-256 (1935); Kobayasi in Bull. Central National Museum Manchoukuo no. 5: 30 Fig. 7 (1943). Syn. *Trichoscytale paradoxa* (Jungh.) Berk., Handb. Fl. New Zeal. p. 617.

of all mushrooms.

C.W. Dodge has pointed out a family Onygenaceae where *Trichocoma paradoxa* should rank, under which subfamilies Onygenoideae, Dendrosphaeroideae and Trichocomoideae are to belong, while Fischer was of opinion to create a special family Trichocomaceae.

Another species reported was *Trichoxoma laccispora* Massee, which has later been made clear synonymous to *T. paradoxa*. *T. paradoxa* is, therefore, a single member in a special family Trichocomaceae by Fischer.

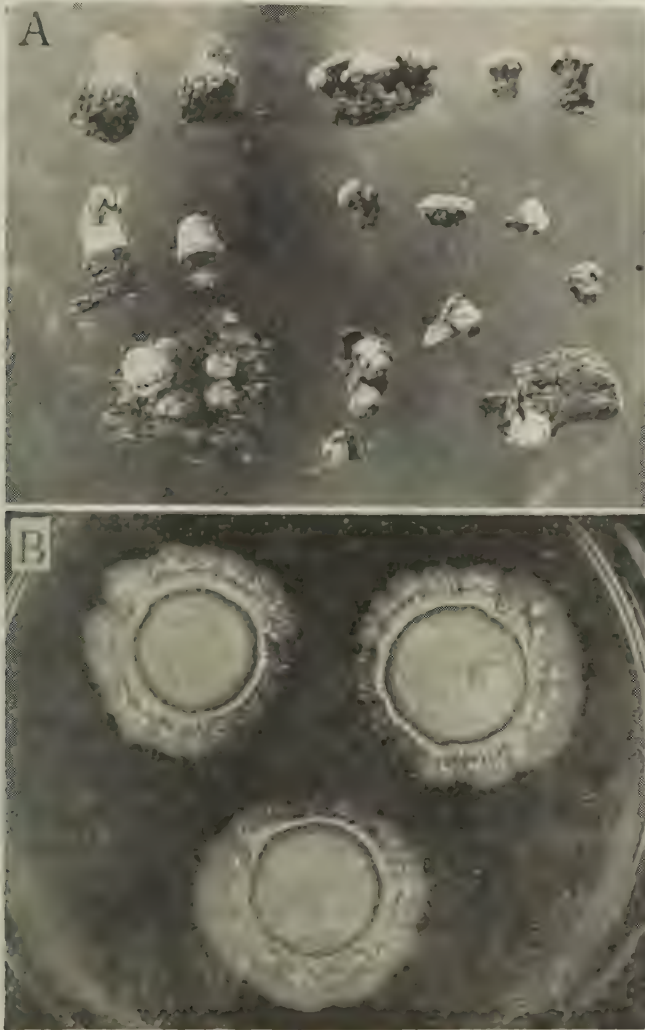


FIG. 3 A. Fruiting bodies of *T. paradoxa*. Asclerotous form (left) & conical form (right) B. Colonies of *P. luteum* ($\times 30/17$)

The fungus is widely distributed in Java, Borneo, Ceylon, Sikkim (in the mountainous district of Himaraya, North Bengal, B.I.), Nilgiri (a native state in Orissa, Bengal), Southern Carolina (reported in only one occasion by Ravenel), Porto Rico, Brasil and in Japan.

In Japan, distribution of *T. paradoxa* is much varied as it is chiefly parasitic on the trunks of *Machilus thunbergii*, and is reported from Kyûsyû, Sikoku, Wakayama Prefecture, Izu and Bôsô Peninsula etc., and Kamakura-Enosima area is known on the northernmost limit of its growth.

A report that the fungus sometimes lives on *Pasania* (*Shiia cuspidata*) has been approved by Kobayasi in Yakusima Island in the South of Kyûsyû, Japan, together with the fact that wild loquat or Japanese medlar (*Ficus erecta*) also been parasitized with in the same island. *T. paradoxa* bears fruitbodies of minor size measuring 6–10 mm in diameter, 10–20 mm in length breaking out the bark of the



Fig. 4 *T. paradoxa*
Section of fruitbody
of conidial form $\times 3$

tree it hangs on, and first develops its integument (outer peridium) in the shape of cup of acorn of *Quercus*, with or without stem, being suberose and fragile, from which cylindrical gleba with thin membranaceous coat (inner peridium) sprouts out before such coat is splitted and gradually torn off while the gleba collapsing into the masses of capillitia in the form of brush with spores in brown colour charged therein before they disperse ventis secundis. Japanese term “Mayuhaki také” (literally, powder puff for eyebrow fungus) comes from its form in general.

As to the classificational aspects of *T. paradoxa*, Kobayasi has already reported, and Boedijn has studied into its embryological and cytological problems too. Number of chromosomes is, the latter author describes, $2n=8$, the spores being mononucleous, and the longitudinal section of gleba exhibits layers in various maturity from its basis up to the top, namely, layer of binucleate ascogenous hyphae, layer in which fusion of the nuclei takes place, layer of uni-nucleate asci, layer in which cell divisions of the nuclei are performed, layer of eight-spored asci, layer of disintegrating asci, and layer of free spores.

The present authors have further carried out a study left out, namely, its pure culture, studies on the conidial form and reconsiderations as into its classificational standing. Materials were raw growths collected by M. Ookubo in Hatizyô Island of Izu Peninsula during the month of April, 1952 and another the authors have obtained in Enosima Isle., Ooiso in the South of Tokyo and in Yakusima (Kyûsyû) in the

Summer, the same year, together with those specimens preserved in the National Science Museum.

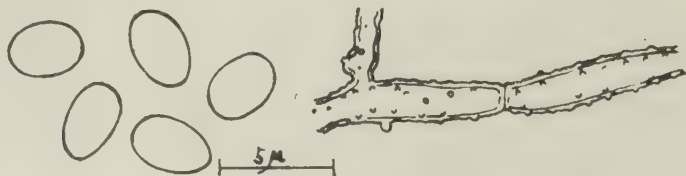


Fig. 5 *T. paradoxa* Conidia & conidiophores

Penicillium luteum strains applied for making comparative studies with *T. paradoxa* were the strain NI-6291 isolated from the soil in Zimmuzi, Kanagawa Prefecture, by Tubaki, and the another ATCC 9644. (NI-6292) from the United States given by Sakaguti Laboratory of Tokyo University.

Pure Culture of *Trichocoma paradoxa* Raw strains obtained in Hatizyô Island, Enosima and Hiratuka have been tried with the young glebal tissues cultured on malt extract agar and the developed were all the same conidia of *Penicillium*-type, morphological descriptions of which are as follows: Colonies on malt extract agar and Czapek's solution agar comparatively rapidly spreading, more or less raised 1–2 mm deep, dry floccose, comparatively tough by the interwoven mycelial felt, at first white, then yellowish (Straw Yellow), later brown or purplish brown (Buckthorn Brown) by producing conidial structures, concentric ring inconspicuous, reverse bright yellow then brownish. Hyphae somewhat densely interwoven, pale yellow, later ochraceous, sparingly branched, septate, $2.5-5\ \mu$, smooth, frequently rough with fein yellowish granules. Conidiophore variable in length, septate, smooth or rough, pale yellowish, $2.5-4\ \mu$ in diameter. Penicilli commonly biverticillate, symmetrical, but frequently asymmetrically 3–4-verticillate. Metulae 2–5-verticillate, clavate or naviculate, apically truncate, pale yellow, commonly

10–12 × 2–3 μ . Conidia ovoid or sphaeroid, smooth, pale ochraceous or almost hyaline, 3–3.5 × 2.5 μ .

Fig. 6 *T. paradoxa*

Conidia & a part of hypha

Conidia thus obtained were then planted on the surface of cut branches of *Machilus thunbergii* cursorily cleansed with alcohol by covering with, and incubated at room temperature in sterilized test tubes with cotton-wool stoppers on July, 14th, 1952, and the sporodochium in oblate sphaeroidal form measuring 1–3 mm was found developing on the leaf-marks, lenticels and cracks on the bark in the month of October, within which was thickly interwoven mycelial complex whole intruding to fill the cellular tissues of the host at the basis. Pulverous conidia brown in colour are formed on the surface to cover it all while mycelial mass in yellow being formed over the bark.

Conidial form of *Trichocoma paradoxa* in Field It is obvious a matter the fungus should develop its conidial form somewhere in situ, as the same is easily found growing in pure culture and the conidial fruitbodies therefrom are formed by covering the host bark with it.

Kobayasi, one of the authors, witnessed, while collecting specimens of *Mitrastemon yamamotoi* close at the base of a pasania tree along the river bank near Ambô Village in Yakusima Island on July 25 th, 1952, a natural growth of *T. paradoxa* on the trunk of the same tree accompanying with the fruitbodies fairly hard and granular or with stems of rather minor size, and its tissues were, under microscope, all the similar in structure to the perithecial forms except for the covering of conidia of penicillial forms on its surface, denoting that being doubtlessly the conidial form of *T. paradoxa*, the morphological details of which runs as follows: Sporodochium erumpent, depressed globose, sessile or stipitate, apparently *Calvatia*-like, 2–4 mm high, or 3–6 mm including stem, 3–7 mm in diam., surface dark olivaceous grey, farinaceous. Stem short cylindrical with the surface like outer peridium of ascogenous form, dark greyish brown. Inner tissue firm, fleshy, bright yellow. Hymenial layer covering the surface of sporodochium. Conidiophores and conidia alike to those observed in culture.

Morphological identity of ascospores and conidia of *Trichocoma paradoxa* with those of *Penicillium luteum* It will be a matter

somewhat unexpected to make a direct comparative study of *Trichocoma paradoxa* with *Penicillium luteum*.* The former is chiefly of tropical growth to develop macroscopic fruitbodies or mushrooms, being parasitical to trees of limited species while the latter being a typical mould recovered from the soil wherever in and out the tropical zone and develop globular perithecia measuring 200 to 300 micron in diameter within its mycelial mass. Interesting coincidence is, however, noticeable in the asci, ascospores of peculiar feature, conidiophores and conidia. The ascospores of *T. paradoxa* are ellipsoid, yellow, then brown, $5.5-7.5 \times 5-5.5 \mu$ (commonly $7 \times 5.5 \mu$); bands 4-7, transversely arranged, short or long, frequently spiral, forked, sometimes with thin partial pellicle. Ascus sphaeroid, ovoid or elongated, 8-spored, hyaline, $9-11 \times 12-15 \mu$.

As for the size of the ascospores of the original description of *T. paradoxa* relates $5-7 \times 5$ micron as large and is measured by Boedijn to be $5.5-7 \times 3.5-6$ micron which roughly resemble to that found in Japan too. Findings in the strain NI 6291, the ascospores of *P. luteum* reveal that they are ellipsoid, yellowish in colour measuring some $5-6 \times 3-4$ micron (5.5×3.5 on an average) with 3-4 bands transversely arranged, sometimes forked or irregular. The size of the ascospores is said to be $4.2-4.8 \times 2.2-2.8$ micron by Raper, Thom and Fennell. Consequently, these numbers show that this American strain has somewhat smaller ascospores than Japanese one. In comparing the ascospores

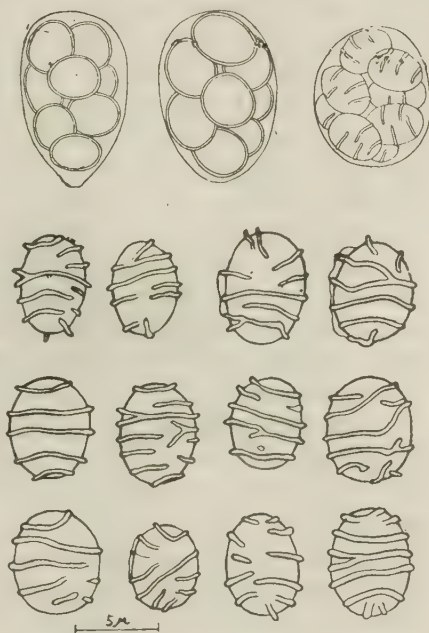
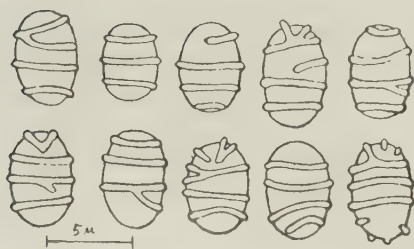


Fig. 7 *T. paradoxa* Asci & Ascospores

of *T. paradoxa* with those of *P. luteum*, the former have 4-7 transverse bands, larger in size, yellowish with somewhat brownish tint, and the latter have 3-4 bands, slightly minor sized, pale yellowish, although the number of measurement by Boedijn on *T. paradoxa* is almost identical with the authors' on *P. luteum*. In respect to the form and size of

* *Penicillium luteum* Zukal, in Sitz.-Ber. Akad. Wien XCVIII: 561 (1889); Thom in U.S. Dept. Agr. Anim. Ind. Bul. CXVIII: 39-42 fig. 8 (1910) et *Penicillia* p. 448-449 (1930); Emmons in *Mycologia* XXVII: 141-143 fig. 10, 16 (1935); Raper et Thom, *Manual of Penicillia* p. 600-603 fig. 155 (1949); Raper et Fennell in *Mycologia* XLIV: 101-111 (1952).

Fig. 8 *P. luteum* Ascospores

ascus and numbers of ascospores in an ascus, these two species are surely equal. The size of conidia of *T. paradoxa* are $3-3.5 \times 2.5$ micron being slightly larger than those of *P. luteum* ($2.5-3 \times 1.5-2$ micron) measured by Raper. Type of conidiophore of these two fungi is equally "biverticillate-symmetrical".

Discussion As already mentioned above, *T. paradoxa* and *P. luteum* have much similarity in the ascospores and conidia, in spite of the slight differences in the sizes and bands of these spores. Although the formation of fruitbodies must be taken as a very significant character in the modern system of fungi, we can not deny the direct relationship of these two fungi which are now classified in two distinct families, *T. paradoxa* producing macroscopical fruitbody, and fructification of *P. luteum* being represented by single perithecium.

As the similar example of such a relation, we can point out a relation between a species of *Cordyceps* with macroscopical stroma and a species of *Torrubiella* with minute and separate perithecium. In the present state of our culturing study, we can not yet find the ascus-formation of *T. paradoxa* on artificial culture-media. In view of the easy formation of conidia in vitro, these conidiiferous mycelia are supposed to be spreading widely in soil or on other organic matters. If we are able to make daring speculation, it might be considered that such a naturalized strain of *T. paradoxa* in soil will come to produce the separate perithecia with the ascospores which have reduced numbers of bands as those of *P. luteum*. If we take *P. luteum* for the transitional form toward reduction, we can comprehend the presence of many different strains of it as to be later mentioned. Up to the present time, *P. luteum* was isolated from soils of Manitoba of Canada, Java, Sweden, Germany, England and Japan. Japanese strain (NI 6291) produces distinctly crowded perithecia as seen in photograph, but has slight production of conidia in culture. On the contrary, the American strain originated from ATCC has good production of conidia, but perithecia are scarcely seen. A variety which produces sphaerical conidia is reported from Europe with a name "*lunzinense*". According to the recent investigation by Raper (1952), all of strains tested by him were found to be homothallic, being contrary to the fact studied by Derx. Raper explains this as due to the differences of strains in a species. These facts show

the variability of this species. It may be supposed that *P. luteum* is a reduced form of *T. paradoxa*. But we can otherwise have a speculation that these two species are the most related fungi differentiated from the common ancestral form. Perhaps the yellow pigments of the tissue of *T. paradoxa* may be the same or nearest one with those of *P. luteum*.

The members of *Penicilliopsis* which rank to the nearby family to Trichocomaceae are known to have the ascospores with longitudinal bands. Any species of *Penicillium* with such a type of ascospores might be found from soils or other organic matters in other days.

Summary

The conidial stage was developed in pure culture from the inner tissue of fruitbody of *Trichocoma paradoxa* Jungh. planted on wort or Czapek's solution agar medium. This was found to be the type of Biverticillata-Symmetrica Group of *Penicillium*.

Moreover, we collected the fruitbodies of conidial stage on the bark of *Shiia sieboldii* in Isl. Yakusima of South Japan. In compared the ascospores, conidia and coloration of mycelium of this fungus with those of *Penicillium luteum* Zukal, there is curious coincidence, although the slight differences as the numbers of transverse bands on ascospores are observed. It may be speculated that these two fungi are the nearest species derived from the common ancestor, or the one is only the degenerated form of the other.

単一胞子分離の簡単な方法——A short method for Monospore-culture

先づ白金線（径）.3~0.5mm, 長さ3~5cm）の先の5~6mmを金槌で叩いて巾1~1.5mmとする。この扁平な部分を曲げて圓筒形にする。その直径は顯微鏡の低倍率の一視野の $\frac{1}{3}$ ~ $\frac{1}{2}$ 位の大きさが良い。

ペトリ皿（径7cm）に出来るだけ透明な培養基（寒天2~3%）を1~1.5mm位の厚さに流し込む。ペトリ皿の裏面に2cm位の間隔を置いてガラス鉛筆で3~4本の線を引く。この線に沿つて一白金線の胞子懸濁液を端から端までぬりつける。培養基上にぬりつけられた胞子懸濁液の液滴を乾かすのにはデシケーターに20~30分間入れて置くと良い。このペトリ皿の培養基上に撒布した胞子は一端から他の一端までの間に顯微鏡の低倍率の一視野に一個の胞子のみ存在するものがあるので、これを前記の白金の輪で寒天と共に取出す。胞子懸濁液の濃度は無色の胞子なら少々白濁したと肉眼で認められる程度、褐色の胞子なら少々褐色の色調が認められる程度が良い。（青島清雄記）

A New Variety of *Allomyces javanicus* Kniep

By

Hiroharu INDOH

印 東 弘 玄： アロミセス ジャヴァニクスの一新種變

In 1929, Kniep found anisogamic planogametes of *Allomyces* which was isolated from soil samples of Java. The male and female gametes of *All. javanicus* Kniep are produced respectively in epigynous male gametangia and hypogynous female gametangia, which are arranged in pairs.

On the other hand, Hatch (1933) reported the sexual organs of the other species of *Allomyces*, *All. arbuscula* Butler. They are consisted of pairs of a hypogynous male gametangium and an epigynous female one.

When the present author observed the sexual organs in a number of isolates of *Allomyces arbuscula* Butler, *All. javanicus* Kniep and *All. javanicus* var. *japonensis* Indoh, he found also that the male gametangia of *All. arbuscula* are hypogynous and those of *All. javanicus* and *All. javanicus* var. *japonensis* are epigynous, though a few exceptional cases were noticed in the latter species. Therefore he treated the evident distinction of the gametangial arrangement between *All. javanicus* and *All. arbuscula*, as an interspecific identical character, in his monographical studies of the Blastocladales (1940).

Emerson (1941) said in his excellent paper of the life cycle and taxonomy of *Allomyces*, sometimes the reversal of male and female gametangia occurs in *All. javanicus* var. *javanicus* Emerson. But the frequency of occurrence of epigynous male gametangia is 8.4% in case of the most remarkable isolate collected from Tanganyika, and 4.2% in one of the strains of Java. And he also adopted the character of the gametangial arrangement between *All. arbuscula* and *All. javanicus*, in making his key to the genus.

In the summer of 1948, the present author found an isolate of *Allomyces* from one of soil samples collected by K. Moriyama, from the paddy field near Lake Yamanaka at the foot of Mt. Fuji. The asexual mycelium of the isolate looks to be identical with *All. javanicus* Kniep var. *japonensis* Indoh, when it is young. Repeating the inoculation of the isolate on boiled hemp seeds, we found the sexual mycelia of the fungus. The characters of the sexual organs are also, very similar to

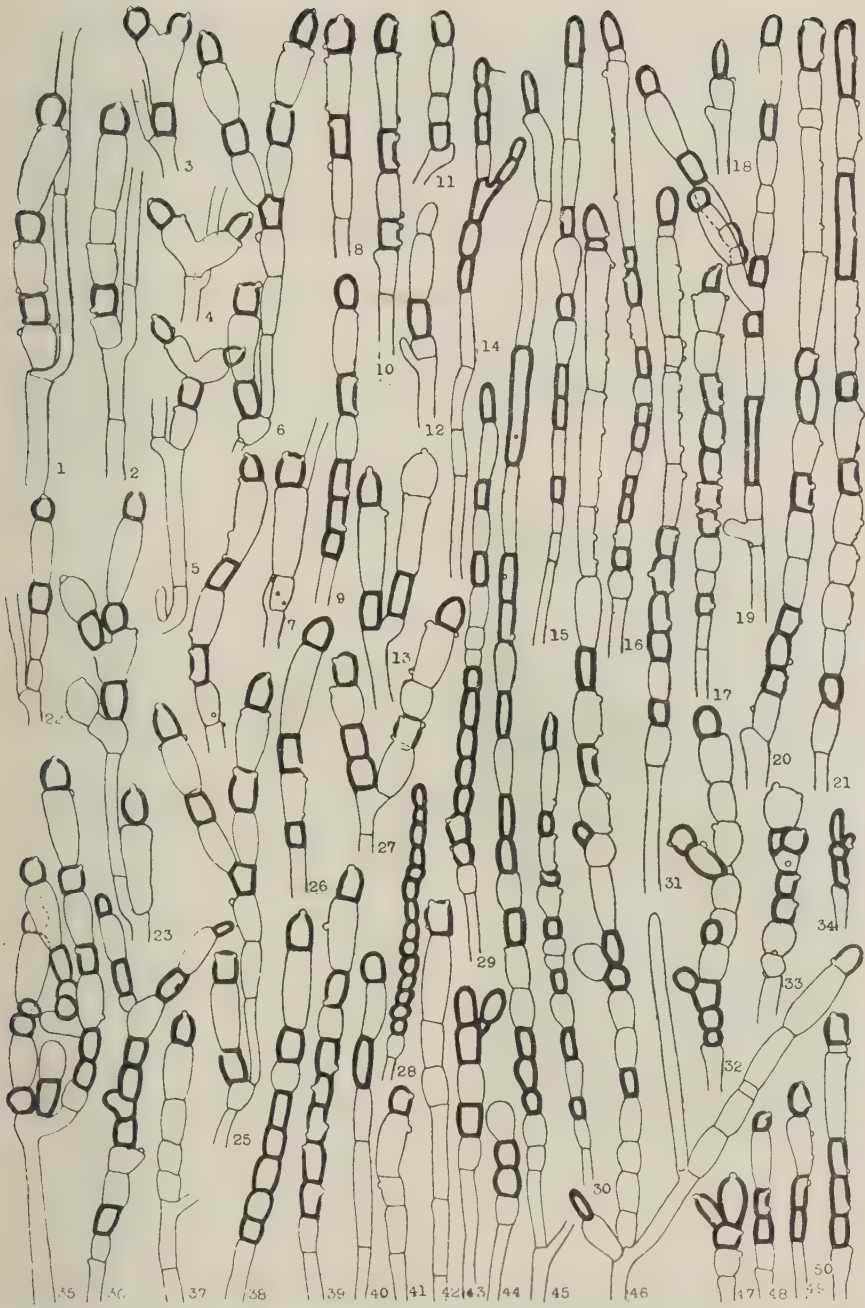


Fig. 1. *Allomyces javanicus* Knip var. *allomorphus* Indoh
 Various types of gametangial arrangement. Heavy lines indicate male gametangia.

ones of *All. javanicus* var. *japonensis*, in its young stage. That is, the asexual mycelium branched several times dichotomously and bore a pair of a hypogynous male gametangium and an epigynous female gametangium on the apices of each hyphal branches. However, according to the growth of the mycelia, the disposition of gametangia becomes disarranged, and when the mycelia reached almost adult stage, the arrangement and form of the male and female gametangia show very complicated appearances.* (Fig. 1, 2.)

It is a question if the varied appearances of the sexual organs occur under a special environmental conditions. Then I put the dried chlamydocysts (resting sporangia) in water with boiled hemp seeds under various conditions, again and again, and gained the complicated sexual mycelia every time, although their growth were sometimes slow and some other times quick. So, it must be thought that the varied appearances of the sexual organs are caused by genotypical, but phenotypical factors.

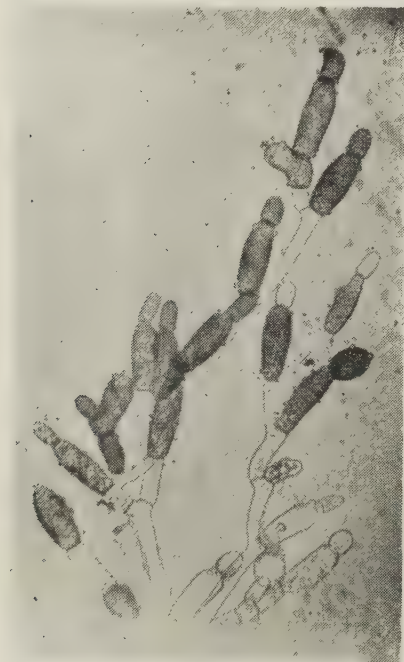


Fig. 2. *Allomyces javanicus* Kniep var. *allomorphus* Indoh Gametangia.

After precise observations of water cultures of asexual mycelia, the writer noticed the zoosporangia of the fungus having a tendency to occur in somewhat branched type, (Fig. 3) and the chlamydocysts also tending to form rather odd shapes, as distorted ovoid, barrel shape, narrow cylindrical form, or often T- shape with a short lateral branch, (Fig. 4) while the normal shape is regularly ovoid or cylindrical. Especially in old cultures which were neglected several weeks after inoculation, the frequent occurrence of divers forms of the asexual organs were observed.

Judging from the foregoing characters, it is evident that our fungus belongs to *Euallomyces* of

* N. Nishimura cultured the fungus from some dried chlamydocysts after Harvey's method, and observed the complication of the sexual organs being quickened, when 0.05% malic acid is added in the cultural water.

javanicus-type, but it is difficult to say that it corresponds either to *All. javanicus* or to *All. javanicus* var. *japonensis*. And *All. javanicus* var. *perandrus* Emerson and *All. javanicus* var. *macrogynus* Emerson are also unidentical with the fungus in question. For these reasons, the writer proposes to call the new fungus *All. javanicus* var. *allomorphus* var. nov..

DIAGNOSIS

Allomyces javanicus Kniep var. *allomorphus* var. nov.

Mycelium white tuft, reaching about 7.8 mm in length, attached by rhizoids to substrata. Hyphae with pseudosepta 25~34 μ , sometimes up to 42 μ thick at base, 13~23 μ , av. 18.2 μ at apices, branching dichotomously or subdichotomously.



Fig. 3. *Allomyces javanicus* Kniep var. *allomorphus* Indoh
Zoosporangia.

Zoosporangia terminal, sympodially arranged, sometimes 2~6 in chained. Primary ones clavate, oval to fusiform, $29\sim45\times84\sim118\mu$, av. $37.3\times97.0\mu$, catenate ones cylindrical, barrel shaped $29\sim45\times50\sim88\mu$, av. $32.3\times66.7\mu$, occasionally Y- or T- shaped. Zoospore similar shape and size to *All. javanicus* var. *japonensis* Indoh.



Fig. 4. *Allomyces javanicus* Kniep var. *allomorphus* Indoh Various forms of chlamydokysts.

Chlamydokysts terminal on asexual mycelia, spherical to ovoid, $42\sim67\times67\sim109\mu$, av. $49.7\times86.1\mu$, sympodially arranged, but in old cultures many of them crooked ovoid, some ones arranged in catenate, subcylindrical to long barrel-shaped, occasionally L- or T- shaped. Appearing yellow orange color, with two layers of membranes, outer one thick conspicuously and finely pitted as *All. javanicus* var. *japonensis* Indoh.

Sexual reproduction by means of anisogamic gametogamy. Primary gametangia terminal on sexual mycelia arranged sympodially, consisting of an epigynous male gametangium and a hypogynous female gametangium. Later arranged in catenate. Male gametangia salmon-orange

globose, $3.5\sim5.5\times7.5\sim10.5\mu$, female gametangia cylindrical to barrel-shaped $7.5\sim9.5\times12\sim16\mu$, the length of female gametangium is 2 to 3 times of the length of the paired male gametangium. But in old cultures, occurs various sizes and forms of male and female gametangia, subglobose, narrow cylindrical, long or short barrel-shaped, Y-shaped. Male and female gametes and zygotes, of similar form and behaviors, to *All. javanicus* var. *japonensis* Indoh.

Hab. Isolated from paddy soil with boiled hemp seeds.

Loc. coll. Side of Lake Yamanaka, at the foot of Mt. Fuji, Japan.

Distr. Endemic.

Latin Description

Zoosporangia saepe Y- vel T-figuras formantia. Chlamydokystidia maturitate

inaequilateraliter ovoidea, singularia vel catenulata, subcylindrica vel doliiformia, raro L- vel T figuras formantia. Gametangia primaria terminalia, sympodiale ordinata, e gametangio masculo epigyno et gametangio femineo hypogyno composita, tandem catenulata. In cultu vetere, gametangia deformata, subglobosa, angustocylindrica, doliiformia vel elongato-doliiformia, vel Y-figuras formantia. Cetera ut in typico.

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Continued from page 133

List of Abbreviations Indicating the Source of Cultures

- ACTU: Institute of Agricultural Chemistry, Faculty of Agriculture, Tokyo University
東京大學農學部農藝化學教室
- ATCC: American Type Culture Collection, Washington, D.C., U.S.A.
- CBS: Centraalbureau voor Schimmelcultures, Baarn, Nederland
- CLMR: Central Laboratory, South Manchuria Railway Co., Dairen
南滿州鐵道株式會社中央試驗所
- EKU: Faculty of Engineering, Kyoto University
- FES: National Forest Experiment Station, Meguro, Tokyo 國立林業試驗場
- IFO: Institute of Fermentation, Osaka 財團法人發酵研究所
- NARI: National Agricultural Research Institute, Nishigahara, Tokyo
國立農業技術研究所
- NI: Nagao Institute, Kitashinagawa, Tokyo 財團法人長尾研究所
- NIHJ: National Institute of Health of Japan 厚生省予防衛生研究所
- OUT: Faculty of Technology, Osaka University 大阪大學工學部
- PATU: Laboratory of Plant Pathology, Faculty of Agriculture, Tokyo University
東京大學農學部植物病理學研究室
- TETH: Department of Fermentation Technology, Faculty of Engineering, Hiroshima University 廣島大學工學部發酵工學科
- TKTB: Biological Department, Faculty of Science, Tokyoto University
東京都立大學理學部生物學教室

November 1952

Kiyoshi Kominami

日本産イグチ科

今 關 六 也

Rokuya IMAZEKI: The Boletaceae of Japan.

日本におけるイグチ類の研究は非常におくれている ということは日本の菌類戸籍簿に登録されていない、無名の種がまだ夥しく野山に残されていることである。私は専門にこの類と取り組んでいるわけではないが、近年日本の菌學界でも、イグチ類の研究に關心が持たれるようになったので、最近の分類説を紹介し、これによつて既知の日本の種を配列して見た。

イグチ類は今までの日本の菌學界では大部分の種が *Boletus* という大きな屬の下におかれていた。即ち Fries 式の舊式の分類に従つていたからである。しかしこの類も他の高等菌類と同様に、その分類學的位置、他の菌群との類縁關係、屬の分け方などについて、突込んだ再検討が行はれ、最近の分類は Fries 式とは全く面目を一新している。そしてこの様な行き方が合理的であり、また今後の大勢でもあると考えられる。我々もまた日本に産する豊富なイグチ類に基いて、新しい分類体系の確立のために貢献したいが、いかにせん、現在の日本における研究は余りにも不充分である。大方の御研究を期待する。

次に最近のイグチ類の分類に關する代表的なシステムを表によつて示す (Table 1)。

Table I. Modern Systems of Boletineae

Gilbert (1931)	Snell (1941, 1942)
Ord. Boletales	Fam. Boletaceae
Subord. Boletineae	Subfam. Boleteae
Fam. Paxillaceae	Euboleteae
<i>Paxillus</i>	<i>Phylloporus</i>
Fam. Boletaceae	<i>Boletinus</i>
<i>Phylloporus</i>	<i>Suillus</i>
<i>Boletinus</i>	<i>Pulveroboletus</i>
<i>Ixocomus</i>	<i>Xerocomus</i>
<i>Xerocomus</i>	<i>Boletus</i>
<i>Boletus</i>	<i>Tylopilus</i>
<i>Krombholzia</i>	<i>Leccinum</i>
<i>Porphyrellus</i>	<i>Porphyrellus</i>
Fam. Leucosporelleae	Gyrodontaeae
<i>Gyroporus</i>	<i>Boletinellus</i>
Fam. Gyraeae	<i>Gyrodon</i>
<i>Gyrodon</i>	Leucosporelleae
<i>Boletinellus</i>	<i>Gyroporus</i>
	Subfam. Strobilomycetaceae
Subord. Strobilomycetinae	<i>Strobilomyces</i>
Fam. Strobilomycetaceae	<i>Boletellus</i>
<i>Boletellus</i>	<i>Polyporoletus</i>
<i>Strobilomyces</i>	

Singer (1945)	Heinemann (1951)
Ord. Agaricales	Ord. Agaricales
Subord. Boletineae	Subord. Boletineae
Fam. Strobilomycetaceae	Fam. Gyrodontaceae
<i>Strobilomyces</i>	<i>Gyroporus</i>
<i>Porphyrellus</i>	<i>Gyrodon</i>
<i>Boletellus</i>	<i>Paragyrodon</i>
<i>Phyllobolites</i>	<i>Phlebopus</i>
Fam. Boletaceae	Fam. Paxillaceae
Subfam. Gyrodontoideae	Fam. Gomphidiaceae
<i>Gyroporus</i>	Fam. Boletaceae
<i>Phaeogyroporus</i>	Subfam. Suilloideae
<i>Paragyrodon</i>	<i>Psiloboletinus</i>
<i>Gyrodon</i>	<i>Boletinus</i>
Subfam. Suilloideae	<i>Ixocomus</i>
<i>Psiloboletinus</i>	Subfam. Xerocomoideae
<i>Boletinus</i>	<i>Phylloporus</i>
<i>Suillus</i>	<i>Xerocomus</i>
Subfam. Xerocomoideae	<i>Boletochaete</i>
<i>Phylloporus</i>	Subfam. Bolletelloideae
<i>Xerocomus</i>	<i>Boletellus</i>
Subfam. Boletoidaeae	<i>Phyllobolites</i>
<i>Phlebopus</i>	Subfam. Boletoidaeae
<i>Pulveroboletus</i>	<i>Pulveroboletus</i>
<i>Boletus</i>	<i>Boletus</i>
<i>Xanthocomium</i>	<i>Xanthocomium</i>
<i>Tylopilus</i>	<i>Tylopilus</i>
<i>Leccinum</i>	<i>Krombholzia</i>
Fam. Gomphidiaceae	Subfam. Ixechinoideae
Fam. Paxillaceae	<i>Ixechinus</i>
Fam. Jugasporaceae	Fam. Strobilomycetaceae
	<i>Porphyrellus</i>
	<i>Strobilomyces</i>

この表で示されるように、イグチ類はこれまで考えられていたように多孔菌即ちサルノコシカケの仲間ではなくて、Agaricales に屬し、マツダケ亞目 Agaricineae に對立するイグチ亞目 Boletineae として一群を設けられている。また従來、襷がある故に Agaricaceae におかれた *Paxillus*, *Gomphidius* (Singer によれば *Clitopilus* も) などは、いずれも Boletineae におかれる。

亞目、科、屬の分類には、胞子の形態、實質 (Trama of Hymenophore 即ち管孔の壁の肉) の組織(後記 *Phylloporus* の項を参照されたい)、菌糸の clamp connection の有無 (Singer によると莖の根元の菌糸で見ると)、傘の表皮の構造、子實層托 (Hymenophore) の形態、菌根形成の有無及び樹種 (針葉樹か闊葉樹か)、さらにまた各種の試薬による呈色反應などが、分類基準として用いられている。このように、單純な外部形態などによつて分類されないで、形態、生態などさまざまな角度から検討され、その綜合に基いて分類される。

さて以下日本産として既に知られているイグチ類を新しいシステムによつて配列する

には、上記の諸説の何れに従つたらよいかという困難な問題がある。筆者は、一應 Snell の式を上台にして次の様にした。

Ord. Agaricales—Subord. Boletineae

Fam. Boletaceae イグチ科

Subfam. 1. Boleteae イグチ亜科

Boletinus Kalchbrenner アミハナイグチ属

Suillus S.F. Gray スメリイグチ属

Phylloporus Quélet キヒダタケ属

Pulveroboletus Murrill キイロイグチ属

Xerocomus Quélet アワタケ属

Boletus Dill. ex Fries ヤマドリタケ属

Leccinum S.F. Gray ヤマイグチ属

Tylopilus Karsten ニガイグチ属

Subfam. 2. Gyrodontae Singer シワイグチ亜科

Gyroporus Quélet クリイロイグチ属

Gyrodon Opatowsky シワイグチ属 (新)

Subfam. 3. Strobilomyceteae オニイグチ亜科

Strobilomyces Berkeley オニイグチ属

Porphyrellus Gilbert クロイグチ属 (新)

Boletellus Murrill キクバナイグチ属 (新)

Boletinus Kalchbrenner

Bot. Zeit., XXV : 182 (1867)——Imai Journ. Jap. Bot., XXV : 18 (1950)

この属は *B. cavipes* をタイプとするもので、設立以来新舊學派を通じて廣く採用されている。Subfam. Boleteae の中で、系統的には次の *Suillus* に近縁の属とされている。その特長は boletinoid hymenophore の言葉があるように、管孔が圓くなく、放射方向の孔の壁が横の壁よりも著しく發達して放射上に配列していることである。管孔は一般のイグチ類より遙かに短かくて大きく、また傘の肉とはなれにくい。次の *Suillus* と共に針葉樹と菌根をつくる北方系の菌群である。日本では次の2種が知られている。

Boletinus cavipes (Opat.) Kalchbr., Enumerat., II : 287 (1867)——Iwade, Bull. Tokyo Imp. Univ. Forests, XXXIII : 61, pl. 14 (1944) —Imai, Journ. Jap. Bot., XXV : 18 (1950) —Kallenbach, Boletaceae, P. 65, pl. 27 (1930)

和名：アミハナイグチ

高山の針葉樹帯に生える。傘の表面に顯著な褐色の鱗片があり、管孔は本属特有の形をし、莖の内部に空洞があることで容易に識別される。

Boletinus pictus (Peck) Peck, Bull. N. Y. St. Mus., II : 77 (1889)——

Imazeki, Appl. Mushr. Sci. IV, no. 2:1 (1940)—Coker et Beers, Boletaceae of N. Carol., p. 88, pl. 59 (1943)—Imai, Journ. Jap. Bot., XXV:19 (1950)

和名：ベニハナイグチ

山梨縣大菩薩峠で筆者が採集した。

Suillus S.F. Gray

Nat. Arr. Brit. Pl., I: 646 (1821)—Snell, Mycol., XXXIV: 406 (1942)—Singer, Farlowia, II: 257 (1945)

Boletus Fr., sensu Karst.,—Imai, l.c., XXV:16 (1950) *Viscipellis* Quél., Enchir., P.155 (1888) *Ixocomus* Quél., Fl. Myc., 411 (1888)—Snell, Mycol., XXIII: 420 (1941)—Gilbert, les Bolets, P. 91 (1931)

Suillus luteus (Fr.) S. F. Gray をタイプとする。一般に、特にフランス學派は Quélet の *Ixocomus* を用いるが、S.F. Gray の *Suillus* (1821) がある以上、認められない。Imai は最近 *luteus* を *Boletus* のタイプとしたが、後で *Boletus* のところで述べる通り、*Suillus* S.F. Gray を採用することが望ましい。

本属はヌメリイグチで見られるように傘の表皮の菌糸は著しく粘質化する。莖の表面には腺狀の細かい疣點をおびるものが多い。子實體托は着生又はやや垂生、管孔の壁の組織は *Boletinus* と共に、所謂 *Boletinus* 型即ち Bilateral-divergent である。日本産は次の通りである。

Suillus bovinus (Linn. ex Fr.) Kuntze, Rev. Gen. Pl., III: 535 (1898)—Singer, Farlowia, II: 278 (1945) *Boletus bovinus* Fr., Syst. Myc., I: 388 (1821)—Kawamura, Nipp. Kinrui Dusetsu, 180 (1929)—auct. plur. *Ixocomus bovinus* Quél., Enchir., 157 (1886)—auct. plur.

和名：アマタケ

Suillus granulatus (L. ex Fr.) Kuntze, Rev. Gen. Plant., III: 535 (1898)—Singer, Farlowia, II: 272 (1945) *Boletus granulatus* L. ex Fr., Syst. Myc., I: 387 (1821)—auct. plur.—Bresadola, Icon. Myc., XIX: 907 (1931)—Coker et Beers, Bolet. N. Carol. p. 76, pl. 50 (1943)

和名：チチアワタケ

東京附近では松林に多い。ベールや鏢がないが、粘性が著しい點はヌメリイグチと同様である。川村博士の日本菌類圖説160圖に示されるアワタケ (*Boletus subtomentosus*) は圖及び記載から見て本種であると考えられる。*granulatus* という種名は莖の表面にある細かい疣點を意味し、川村氏の圖には明らかにそれがかかれていゝる。

Suillus Grevillei (Kl.) Imazeki comb. nov. *Boletus Grevillei* Kl., Linn., VII: 198 (1832)—Imai, l.c., XXV: 17 (1950) *Boletus elegans*

Fr., *Epicr.* p. 409 (1836-8) — Bresadola, *Icon. Myc.*, XIX : 902 (1931) — Kawamura; l.c., 48 (1929) — auct. plur. *Suillus elgans* Snell, *Lloydia*, VII : 27 (1944) *Boletus flavus* Wich. ex Fries., *Kallenbach*, l.c., 37, pl. 17 (1928)

和名： ハナイグチ

Suillus luteus (L. ex Fr.) S.F. Gray, *Nat. Arr. Brit. Pl.*, I : 646 (1821) — Snell, *Lloydia*, VII : 36 (1944) — Singer, *Farlowia*, II : 270 (1945) *Boletus luteus* L. ex Fr., *Syst. Myc.*, I : 386 (1821) — auct. plur. — Imai, l.c., XXV : 17 (1950)

和名： スメリイグチ

Suillus piperatus (Bull. ex Fr.) Kuntze, *Rev. Gen. Pl.*, III : 535 (1898) — Singer, *Farlowia*, II : 278 (1945) *Boletus piperatus* Bull. ex Fr., *Syst. Myc.*, I : 388 (1821) — Gillet, *Champ. Fr.* p. 640, pl. 435 (1878) — Rea, *Brit. Basid.* p. 561 (1922) — Konrad et Maublanc., *Icon. Sel. Fung.*, V : 419 (1928) — Bresadola, *Icon. Myc.*, XX : 911 (1931) — Coker et Beers, *Bolet. N. Carol.* p. 38, pl. 25 et 62, f. 11-12 (1943) *Viscipellis piperata* Quélet, *Enchir.*, p. 157 (1886) *Ixocomus piperatus* Quélet, *Fl. Myc.* p. 414 (1888) — Gilberts, *Bolets*, p. 115 (1931)

和名： コシヨウイグチ (新)

本種は 1949 年 10 月 26 日土岐晴一氏が浅川で採集した、傘の大きさ 3~5 cm の小形なイグチで、表面は粘性をおび、管孔は赤褐色、肉の味が辛いことが特徴である。

Suillus viscidus (L. ex Fr.) Imazeki, comb. nov. *Boletus viscidus* L. ex Fries, *Bolet.*, 12 (1835); *Epicr.*, 423 (1836-8) — Gillet, *Champ. Fr.*, 634, pl. 424 (1878) — Bresadola, *Icon. Myc.*, XX : 932 (1931) — Konrad et Maublanc, l.c. p. 416 (1935) — Imai, l.c., XXV : 17 (1950) *Boletus laricinus* Berk. ap. Hook., *Engl. Fl.*, V, 2 : 148 (1836) *Ixocomus viscidus* Quél., *Fl. Myc. Fr.* p. 416 (1888) — Gilbert, *Bolets*, p. 114 (1931)

和名： シロスメリイグチ

本種はカラマツ林にだけ発生するもののようである。筆者は八ヶ岳で始めて採集、その後、茨城県多賀郡高萩町に近い林業試験場の試験地にある小面積のカラマツ見本林内でも採集した。カラマツとの間に緊密な関係があることがわかる。

Phylloporus Quélet

Fl. Myc. Fr., 409 (1888) — Gilbert, *Bolet.*, 87 (1931) — Konrad et Maublanc, *Icon. Sel. Fung.*, VI : 450 (1935) — Imai, *Stud. Agar. Hokkaido*

p. 246 (1938)—Singer, Farlowia, II: 279 (1945)—Heinemann, Bull. Jard. Bot. Bruxelles, XXI: 249 (1951)

Boletaceaeの中で管孔の代りに褶がある菌は本属だけである。それ故に従来は一般にマツダケ科におかれ、或は本属のタイプである *P. rhodoxanthus* は *Paxillus*; *Clitocybe*; *Gomphidius* 属などにおかれた、しかし hymenophore の形を除いては次の *Xerocomus* に極めて類似しており、その類縁性を認めることが出来る。

また Singer によると褶の實質の菌糸は中心の軸層では並列し、兩側層では hymenium に向つて分出、散開する型 (bilateral-divergent=*Boletus* type) と、兩側層の菌糸が余り散開せず、軸層と同様に殆ど並列性である型 (*Phylloporus* type) とに2大別できるが、*Phylloporus* と *Xerocomus* とは後者に屬し、前の *Suillus*, *Boletinus* 及び次の *Boletus* 以下は前型に屬する。

Phylloporus rhodoxanthus (Schw.) Bres., Fung. Trid., II: 95 (1900); Icon. Myc., XVI: 768 (1930)—Imai, l.c. p. 246 (1938)—Singer, in Farlowia, II: 280 (1945) *Clitocybe Pelletieri* Gillet, Champ. Fr. p. 170 (1878)—Kawamura, Illust. Jap. Fungi, pl. 11, f. 3-4 (1914): Nipp. Kinrui Dusetzu, 109 (1929)

和名: キヒダケ

褶が莖に長く垂生するために、一見 *Clitocybe* と考えられ、川村博士も *C. Pelletieri* の名で紹介されたが、その後今井博士は *Phylloporus* 屬を採用された。本種は時に褶とと褶の間をつなぐ横の脈が顯著になり、*Boletaceae* との連がりを一層明らかに示す場合がある。

Xerocomus Quélet

Flor. Mycol., 417 (1888)—Gilbert, Bolets, 94 (1931)—Snell, Mycologia, XXXIII: 420 (1941)—Singer, Farlowia, II: 284 (1941)—Heinemann, l.c., XXI: 265 (1951)

タイプは *Xerocomus subtomentosus* (L. ex Fr.) Quél. である。傘の表面は細かいビロード状でなめし皮の觸感があり、*Phylloporus* に類似するが、管孔は孔状である。しかし莖に接する部分は放射状に長目となり幾分垂生し、*Phylloporus* に連絡があることを示す。

Xerocomus astereicola Imazeki, sp. nov.

Pileo 4-5.5 cm lato, 1-1.3 cm crasso, convexo dein expando, margine plus minusve undulato, sicco, subtiliter velutinoso-tomentoso, sordide ochraceo (dirty raw sienna); carne pallido citrina, tacto cyano-caerulescentis, dein fusco-brunnescentis; hymenophoro convexo, adnato-subdecurrentis, citrino vel luteo, tacto cyano-caerulescentis, ut in caro, poris angularibus, ca 1 a mm, poris juxta stipitem radialiter elongatis; stipite

4-5×0.5-0.7 cm crasso, deorsum leviter incrassato, dein citatem attenuato, fuliginoso striaturato, apice citrino; sporis ochraceis, oblongis, 9-11-(12)×4-5.5 μ ; cystidiis hyalinis vel pallido ochraceis, 70-80×8.5-11.5 μ .



Fig 13. *Xerocomus astereicola* Imaz. (×3/7)

Habitat: ad *Astraeum hygrometricum* parasiticum.

Nom. Jap.: Tamanori-iguti, nov.

Spec.: Asakawa, Tokyo, July 31, 1951, leg. Imazeki-R., "Typus", in Herb. Gov. For. Exp. Stat. et Oct. 17, 1947, leg. Imazeki.

The writer was at first impressed as it being same with *X. parasiticus*, when he met with a single fruitbody growing at the road side in the experiment forest at Asakawa in Oct. 1947. He had failed to find it during the following three years, but in 1951, he found two fruitbodies at the same place where he collected formerly. He, then, compared with the descriptions of *X. parasiticus* given by Snell, Coker and Beers, and Kallenbach, he came to the conclusion that they are different not only in their host plants but also in their morphological characters.

This species is parasitic on *Astraeus hygrometricus*, not on *Scleroderma* spp. As well as its parasitic habitat, it resembles to *X. parasiticus* morphologically, but differs from the latter by the character that the flesh and tubes turn decisively blue when cut, the color of the stem is dark fuliginous, and the spores are much smaller than the latter.

Xerocomus parasiticus (Bull. ex Fries) Quél. はニセンヨウロ属に寄生する特異なイグチで、この様な性質は Boletineae 中でも唯一のものであつた。しかも歐洲・アメリカでも極めて稀に産するものとされていた、日本のものは上記の様に寄主を異に

するばかりでなく、形態的にも違があり、別種とするのが妥當である。いづれにしてもかかる珍菌が日本にも發見され、しかもツチグリに寄生していることも從來の記録になく特筆に値する。採集地は淺川の林業試験場分室の裏山で、道ばたの上にけすつたところ、そこに毎年多數のツチグリが出るが、タマノリイグチは 1947 年以來 2 回、3 個体を發見したに過ぎない。發生個所は 2 回共ほとんど同一のところであつた。

Xerocomus pulverulentus (Opat.) Gilbert, Bolets, p. 116 (1931)

Boletus pulverulentus Opatowski, Comm. Hist. Nat. Fung. Bolet., 27, pl. 1 (1886)——Konrad et Maublanc, Icon. Sel. Fung., V: 411 (1928)——Kallenbach, Pilz. Mitteleur., I: 13, pl. 6 (1927) *Boletus badius* Kawamura, Nippon Kinrui Dusetu, 49 (1929)——Imazeki, in Asahina's Nipp. Inkwa, Dukan, 493, pl. 237, f. 1 (1939) — auct. plur. jap. [non Fries]

和名：イロガワリ、アイタケ（信陽菌譜）

本種は我々が從來 *Boletus badius* としていたものである。*B. badius* は傘も莖もイロガワリにくらべて明るい褐色であり、肉の青變は *pulverulentus* ほど甚しくない。

Xerocomus subtomentosus (L. ex Fr.) Quél., Fl. myc., p. 418 (1888)——Gilbert, l.c., 116 (1931)——Singer, Farlowia, II: 297 (1945) *Boletus subtomentosus* L. ex Fr., Syst. Myc., I: 389 (1821)——auct. plur., [non *B. subtomentosus* Fr., sensu Kawamura, Nippon Kinrui Desetsu, 160 (1929)=*Suillus granulatus*]

和名：アワタケ

川村博士の日本菌類圖説にある *subtomentosus* は記載及び圖から判斷して、*Suillus granulatus* と考えられる。従つて和名のアワタケは嚴密な意味では *subtomentosus* の正名とすることは不合理であるが、*S. granulatus* には筆者がチチアワタケなる和名を與えた（隠花植物圖鑑 495 頁）から、あえてアワタケの名を本種に残す。

Pulveroboletus Murrill

Mycologia, I: 9 (1909)——Snell, *Mycologia*, XXXIII: 420 (1941)——Singer, *Amer. Midl. Nat.*, XXXVII: 5 (1947)

P. Ravenelli をタイプとする。日本では最近本郷氏が本種を記録しただけである。傘も莖もその表面が黄色の粉狀の *universal veil* で被はれていることが特長である。

Pulveroboletus Ravenelli (B. et C.) Murrill, *Mycologia*, I: 9 (1909)——Singer, l.c., XXXVII: 7 (1947)——Hongo, *Acta Phytotax. Geobot.*, XIV: 75 (1951) *Boletus Ravenelli* B. et C., *Ann. Mag. Nat. Hist.*, II, 12: 429 (1853)——Coker et Beers, *Bolet. N. Carol.*, 27 (1943)

和名：キイロイグチ

滋賀。京都で最近発見された、本郷氏の詳しい記載と図がある。

Boletus Dill. ex Fries

Syst. Myc., I: 385 (1821), sensu stricto Gilbert, Bolets, 96 (1931)——Singer, Amer. Midl. Nat., XXXVII: 20 (1947), [non S.F. Gray (1821), nec Imai, Journ. Jap. Bot., XXV: 16 (1950)]

元來 *Boletus* Fr. なる属は極めて大きな属で、その内容も複雑、雑多であつたから、今日これが自然の類縁に基いて細かく分割されるのは當然である。しかしその際に *Boletus* の名をどの群に残すかは、Fries が属のタイプを指定していない爲に、異説がたてられる原因になる。その代表説はタイプを *B. luteus* にするものと *B. edulis* にするものとであり、これは今井氏ものべている。何れの説も *Boletus* の解釋を狭めることによつておこる。學名の混亂を少くしようとする考えには變りないが、*luteus* 説の人は *Systema Mycologicum* (1821) の *Boletus* Fr. の筆頭種が *luteus* であるところからこれを属のタイプとし、一方 *edulis* 説の人は、*Boletus* は *Boletaceae* の中心になる属であるからその代表的な種を属のタイプに選ぶべきであり、また *luteus* には Fries の *Systema Mycologicum* と同年の 1821 年に S.F. Gray が *Suillus* なる属をたてているから、廣義の *Boletus* を分ける場合には *luteus* には *Suillus* を用い、*Boletus* にはその代表種の一つである *edulis* (歐米人は美味な食菌として廣く珍重する) をタイプとした方がよいというのである。

これらの兩説とも規約上の不都合はないと思うが、筆者は次の理由によつて *edulis* 説に従うのがよいと考える。即ち Fries の *Boletus* にはタイプの指定かないが、S.F. Gray は明らかに *luteus* を *Suillus* のタイプとしている。しかもその年代は Fries の Syst. Myc. と同じ 1821 年である、また Gilbert, Snell, Singer など近代の *Boletus* 學者はいづれも *Suillus* 属を *luteus* に、またこれら 3 氏に加えて Heinemann も *edulis* を *Boletus* のタイプとしているように、前記 *edulis* 説が今日の *Boletus* 學界を支配し、將來もまた支配するであろうとの大勢を認めざるを得ないからである。そしてその邊で議論をとりめることが、學名の混亂を避ける所以であると考えるのである。

日本で記録された狹義の *Boletus* は次の通りである。

Boletus calopus Fries, Syst. Myc., 1: 390 (1821) — Gillet, Champ. Fr., 645 (1878) — Saccardo, Syll. Fung., VI: 24 (1888) — Rea, Brit. Basid. p. 570 (1922) — Konrad et Maublanc, Icon. Fung. Sel., V: 402 (1930) *Boletus olivaceus* Schaeff. ex Fr., Epier., 416 (1836–8) *Boletus pachypus* Fries, Epier., 416 (1836–8) — auct. plur. — Kawamura, Bot. Mag. Tokyo, XXII: 377, f. 5 (1908)

和名：アカジコウ

川村氏によればアカジコウは信州の方言であると。即ち信州ではヌメリイクチをジコウボウといい、本種は赤いジコウボウの意味である。學名 *calopus* は Gilbert, Konrad & Maublanc, Singer などの意見によつたものであるが、歐洲では一般に *pachypus* の名が廣く使はれている。

Boletus edulis Bull. ex Fr., Syst. Myc., I: 392 (1821) — Kawamura, Bot. Mag. Tokyo, XXII: 323, f. 1 (1909); Nipp. Kinrui Dusetsu, 140, 214 (1929)

和名：ヤマドリタケ

Boletus erythropus Fries, Syst. Myc., 391 (1821) — Gilbert, l.c., 118 et 169 (1931) — Konrad et Maublanc, l.c., V: 407 (1935) — Kallenbach, l.c., 21, pl. 2, f. 3-4, pl. 8 (1927) *B. miniatorporus* Secretan, Mycogr, Suisse, III: 28 (1833) — Kallenbach, l.c. p. 79, pl. 30 (1930)

和名：オウウラベニイロガワリ (新)

筆者はこれを東京都浅川の林業試験場内で度々採集している。次の *B. luridus* に似るが、莖の表面に網目をあらわさない

Boletus luridus Schaeff. ex Fries, Syst. Myc., I: 391 (1821) — Gilbert, l.c., 118 et 169 (1931) — Kallenbach, l.c., p. 29, pl. 15-16 (1928) — Bresadola, Icon. Myc., XIX: 929 (1931)

和名：ウラベニイロガワリ

筆者はまだ *B. luridus* を採集したことがないが、川村、今井兩氏が記録している。しかし川村氏の圖説 (1929) 171 の *B. luridus* 莖の網目をあらわさず (但し記載には往々闇赤色の網目をあらわせりとある), *B. erythropus* の印象を與える。

Boletus rubellus Krombh., Natur. Abb. Schw., V: 12, pl. 36, f. 21-24 (1836) — Bresadola, Icon. Myc., XIX: 941 (1931) — Singer, Amer. Midl. Nat., XXXVII: 45 (1947) *Boletus sanguineus* With. ex Lév., in Paulet, Icon. Champ., II ed., 97 (1855) [non Secretan (1833)] — Kallenbach, l.c. p. 123, pl. 41 (1937) — Kawamura, Nippon Kinrui Dusetsu, 153 (1929)

和名：コウジタケ

Boletus satanus Lenz., Nützl. u. Schäd. Schwämme, 67, pl. 8, f. 33 (1831) — Fries, Epicr., 417 (1836-8) — Kallenbach, l.c., p. 1, pl. 1. (1926) — Bresadola, Icon. Myc., XIX: 927 (1931) — Singer, Amer. Midl. Nat., XXXVII: 82 (1947)

和名：ウラベニイグチ

唯一の毒菌と考えられる。

Leccinum S.F. Gray

Nat. Arr. Brit. Pl., I: 646 (1821), emend. Snell, Mycologia, XXXIV: 406 (1942) —Singer, Amer. Midl. Nat., XXXVII: 110 (1947) —*Krombholzia* Karsten. Rev. Myc., III: 17 (1881)——Gilbert, Bolets, 97 (1931)——Heinemann, l.c. XXI: 327 (1951)

タイプは *L. aurantiacum* Bull. ex S.F. Gray である。管孔は離生または隔生、色は白色質、莖は細長く、表面には網目なく、細かいささくれをおびトゲトゲしている。

Leccinum chromapes (Frost) Singer, Amer. Midl. Nat., XXXVII: 124 (1947) *Boletus chromapes* Frost, Bull. Buffalo Soc. Nat. Hist., II: 105 (1874) —Kawamura, Bot. Mag. Tokyo, XXII: 329 (1908); Nipp. Kinrui Dusetsu, 106 (1929)——Coker et Beers, l.c. p. 22 (1943) *Ceriumyces Chromapes* Murrill, Mycol., I: 145 (1909).

和名: アケボノアワタケ

川村氏が圖示するように美しいイグチで、長野縣上諏訪、東京都下などから採集されている。

Leccinum scabrum (Bull. ex Fr.) S.F. Gray, Nat. Arr. Brit. Pl., I: 647 (1821)——Singer, Amer. Midl. Nat., XXXVII: 123 (1947) *Boletus scaber* Fr., Syst. Myc., I: 393 (1821)——Kawamura, l.c., 175 (1929) —auct. plur.

和名: ヤマイグチ

Tylopilus Karsten,

Rev. Mycol., III: 16 (1881)——Murrill, Mycol., I: 15 (1909)——Konrad et Maublanc, Icon. Sel. Fung., VI: 451 (1935)——Snell, Mycol., XXXIII: 421 (1941)——Singer, Amer. Midl. Nat., XXXVII: 89 (1947)——Heinemann, l.c., XXI: 314 (1951)

タイプは *T. felleus* (Bull. ex Fr.) Karst. である。肉は白くて黄味をおびないこと、胞子紋が肉色で、オリーブの色氣をおびないことが特長である。

Tylopilus felleus (Bull. ex Fr.) Karst., Rev. Myc., III: 16 (1881)——Konrad et Maublanc, l.c., IV: 397 (1935)——Singer, Amer. Midl. Nat., XXXVII: 95 (1947) *Boletus felleus* Bull. ex Fr., Syst. Myc., I: 394 (1821)——Gillet, Champ. Fr., 634, pl. 423 (1878)——Gilbert, Bolets, 117 (1931)——Bresadola, Icon. Myc., XIX: 938 (1931)——Kallenbach, l.c., 131, pl. 42 (1938)——Coker et Beers, Bolet. N. Carol., 16, pl. 5, f. 1 et pl. 7 (1943)——Kawamura, Nippon Kinrui Dusetsu, 68 (1929)

和名: ニガイグチ

Gyroporus Quélet

Enchir., 161 (1886) emend., Pat., Ess. Tax., 124 (1900) Murrill, Mycol., I: 14 (1909) Rea, Brit. Basid. p. 554 (1922) — Gilbert, Bolets p. 101 (1931) — Konrad et Maublanc, Icon. Sel. Fung., VI: 472 (1935) — Snell, Mycol., XXXIII: 422 (1941) — Signer, Farlowia, II: 231 (1945) — Heinemann, Bull. Jard. Bot. Brux., XXI: 228 (1951)

Singer は *Gyroporus*, *Gyrodon* などで Subfam. Gyrodontoideae を設けているが、これらは、菌糸（莖の根元の菌糸を検査する）に顕著な clamp connection があることで、*Suillus* 以下の諸属、諸亞科と異としている、また Heinemann や Snell は孢子が *Suillus*, *Boletus* の仲間に比べて小さく、短楕圓形または類球形であることを重視している。*Gyroporus* のタイプは *G. cyanescens* (Bull. ex Fr.) Quél. である。この種は日本ではまだ記録されていないが、筆者は 1950 年の夏に、静岡県濱湖北方の松山で本産と思はれるものを採集したが、不注意にも標本の作成に失敗した。

Gyroporus castaneus (Bull. ex Fr.) Quélet, Enchir., 161 (1888) Murrill, Mycologia, I: 14 (1909) — Rea, Brit. Basid., 554 (1922) — Gilbert, Bolets, 101 (1931) — Konrad et Maublanc, l.c., IV: 394 (1935) *Boletus castaneus* Bull. ex Fries, Syst. Myc., I: 237 (1821) auct. plur.

和名： クリイロイグチ

本種は今井氏が北海道から記録している〔北海道林業會報, XXVII no. 12: 3 (?) (1928)]

Strobilomyces Berkeley

Outl. Brit. fung., 236 (1860) — auct. plur.

Strobilomyces floccopus (Vahl. ex Fr.) Saccardo, Syll. Fung., VI: 50 (1888) — Imai, Journ. Jap. Bot., XXV: 19 (1950) *Boletus floccopus* Vahl. ex Fr., Syst. Myc., I: 393 (1821) *Strobilomyces strobilaceus* (Scop. ex Fr.) Berkeley, Outl. Brit. Fungi, 236 (1860) — auct. plur.

和名： オニイグチ

耳なれた *S. strobilaceus* の名は先名 *floccopus* によつておきかえられる。

Porphyrellus Gilbert

Bolets, 99 (1931) — Konrad et Maublanc, l.c., VI: 451 (1935) — Snell, Mycolog., XXXIII: 421 (1941) — Singer, Farlowia, II: 115 (1945) — Heinemann, Bull. Gard. Bot. Brux., XXI: 333 (1951)

タイプは *P. porphyrosporus* (Fr.) Gilb. である。Gilbert 及び Snell はこれを Subfam. Boletoidae (Fam. Boletaceae sens. str.) においたが、Singer, Heinemann は *Strobilomyces* に類縁の属とした。これらの菌は胞子が黒色乃至黒褐色で、一般に表面に彫刻模様があり、また先端に發芽孔があるというのであるが、*Porphyrellus* では胞子の彫刻模様は不明瞭である。しかし Singer によると胞子の内膜には細かい突起があり、外膜にはまりこんでいるという。これは oil immersion でみとめられるが、實際的には smooth といつてよい。Heinemann は胞子の色の他、外形、つまり長さが巾の2倍以下という点にも重きをおき *Strobilomyces* と同じ科においた。これらの点で次の *Boletellus* と共に *Strobilomyces* と Boletoidae (又は狭義の Boletaceae) との中間にある属である。

タイプである *P. porphyrosporus* はまだ日本から記録されていないが、確かに存在すると思われる。筆者は今年の夏、北海道でこれと思はれるものを採つたが、標本作成に失敗した。青森の成田傳藏氏の話でも本種が津軽方面にあるらしい。とりあえずクロイグチの名を與えておく。

Boletellus Murrill

Mycologia, I:10 (1909), emend, Gilbert, Bolets, 106 (1931)— Snell, Mycologia, XXXIII:422 (1941)— Singer, Farlowia, II:107 (1945)— Heinemann, Bull. Jard. Bot. Brux., XXI:287 (1951)

タイプは *B. Ananas* (Curt.) Murr. である。Murrill は *Strobilomyces* に似て銹褐色の胞子を有することを属の特長としたが、その後 Gilbert, Snell などは胞子の形態に重點をおき、胞子は褐色で、膜面に縦に走る條紋または畝形の隆起とか疣狀の突起があるものを本属に置いた。Singer も Heinemann もほぼ同様である。この様に胞子の膜に何等かの彫刻模様があることは *Strobilomyces* に似ており、それ故に Snell 以下は *Strobilomycetaceae* (又は *Strobilomycetaceae*) には所屬させたが、Heinemann は胞子の色とその長さが巾の2倍乃至2倍以上という外形を重視して、Boletaceae の中に *Boletelloideae* 亞科を設けた。

何れにしても本属は *Boletus* 群と *Strobilomyces* 群とをつなぐ中間的な属であると考えられる。

本属には次の3種がある。

Boletellus floriformis Imazeki, sp. nov.

Pil o hemisphaerico dein convexo, 6—7 cm lato, 2.5—3.5 cm crasso, sicco, sordide roseo, dense squamo o vel saepe in maturitate eleganter tessellato rimoso, squamis majusculis, adpressis, fuliginis, velo membranaceo lacerato, margine obtuso, appendiculato; contextu 1.5 cm crasso, compacto, pallido vel flavidulo, juxta hymenophorum plus

minusve ochraceo vel isabellino, fracta caerulescente, hymenophoro tubuloso, facile separabili, 1.5-2.5 cm longis, subliberi vel adnexo, in sectione cuneiformi, luteo ochraceo vel melleo, tactu leniter caerulescente, tandem (i i sicco) umbrino; poris amplis, irregularibus (circularibus vel angularis), 1-2 mm latis, acie denticulatis; stipes 7-10 × 1 cm crasso, cylindrico, solido, firmo, basi subbulboso, fuligineo, apice roseo-purpureo, levi, leniter adpresse fibrilloso, fere glabro, caro firmo, sordido, basi fuliginescens; sporis ellipsoideis, basi papillatis, brunneo-ochraceis, longitudinaliter costatis, $20-24 \times 8.5-12.5 \mu$; paracysidiis clavatis, tenuiter tunicatis, $41-47 \times 13-17.5 \mu$.



Fig 14. *Boletellus floriformis* Imaz.
Fruitbodies ($\times 3/7$) & Spores ($\times 650$)

Nom. jap.: Kikubana-iguti (nov.).

Specimens: Typus:—Asakawa near Tokyo, Sept. 13, 1949, leg. Toki-S., No. F. 1337 in Herb. For. Exp. St.: Tokyo, Meguro, Aug. 1950, leg. Namekawa.

Among the known *Boletellus*, the present species seems to be very near to *B. Ananas* and to *B. pallescens*. From *B. Ananas* it differs in the larger spores and also in the color of pileus and stem. *B. pallescens* is, however, ambiguous for the writer, but judging from the description of Saccardo in his Sylloge Fungorum IX, the writer's species does not accord with *B. pallescens* of Australia in the color of pileus and stem.

Boletellus pallescens (Cooke et Masee) Gilbert, Bolets, p. 107 (1931)
Strobilomyces pallescens Cooke et Masee, Grev., XVIII:5 (1889) —
 Saccardo, Syll. Fung., IX:159 (1891) — Lloyd, Myc. Notes, 47:663
 (1917) *Strobilomyces pallidus* Lloyd, Myc. Notes, 39:538 (1915) —
 Yasuda, Bot. Mag. Tokyo, XXIX:115 (1915).

和名: ヒメオニイグチ

This species was recorded from Tottori by the late Prof. Yasuda under the name *Strobilomyces pallidus* in 1915. The name “pallidus” was, however, the careless miswriting of “pallescens” of Cooke and Masee, as Lloyd did in his Mycological Notes No. 39. Yasuda followed the Lloyd's publication. So the name “pallidus” should be corrected as “pallescens.”

As above noted, it is ambiguous for the writer whether the Japanese pallescens is truly same with the Australian species or not. But, as the writer has not been able to have a chance to examine the fresh specimen from Tottori, where the plant seems to be frequently collected. So, the further studies are needed about this species.

日本産の記録は生駒義弘氏が鳥取で採集したものである。*S. pallidus* の名は實は Lloyd が北米 Alabama 産のものを報告した時、pallescens とすべきものを、誤つて pallidus とし、安田氏もそれをそのまま引用したものである。この誤りについては Lloyd は Myc. Notes, 47:663 (1917) に訂正している。

廣江氏もまた鳥取で生駒氏のものと同じ種類らしいものを採集して、これを同氏の原色茸類辞典 92 (1933) に圖説している。それによると、安田氏の記載は恐らく乾燥して變色した標本に基いて書かれたものであらうといい、“全体美麗な赤紫色、肉は藍色に變る”と訂正している。しかし廣江氏はそれ以外の記載を殆ど行はず、また圖も甚だ不鮮明で眞實を知り難い。

本種と前記の *B. floriformis* 及び *B. Ananas* とは共に極めて近似の種である。しかし *B. Ananas* は前2種にくらべて孢子は遙かに小さく、傘と莖の色が異なる。また *pallescens* と *floriformis* とは孢子の大きさはほぼ等しいが、傘と莖の色が異なる。しかし筆者の *floriformis* と鳥取産の *pallescens* とが果して同種か否かは尙精査を要する。たゞ *floriformis* は廣江氏のように“全体赤紫色”ではない。

Boletellus Russellii (Frost.) Gilbert, Bolets, 107 (1931) *Boletus Russellii* Frost, Bull. Buffalo Soc. Nat. Sci., II:104 (1874) — Farlow et Burt, Icon Farlowiae, pl. 118, f. 2 (1929) — Coker, et Beers, Boletaceae of N. Carolina, 75, pl. 48 et 64, f. 14 (1943) *Ceratomyces Russellii*,

Mycol., I:144 (1909)—Hongo, Act. Phytotax. Geobot. XIV:74 (1951)

和名: セイタカイグチ

本郷次雄氏が滋賀縣瀬田町で採集された。

Fig. 15. は本郷氏の原色圖からうつしたものである。

氏は *Ceratomyces* の屬名を使つたが、その胞子は本郷氏も圖示する様にラグビーボール型で、縦の畝型の隆起があり、典型的な *Boletellus* である。なほ *Ceratomyces* なる屬は今日 *Xerocomus*, *Boletus* sens. str. などの菌を包含する混合屬で、Gilbert 以下の *Boletus* 學者はこれを認めていない。

本種は胞子の他、莖の表面に極めて著しい網目狀の隆起模様を有することで他と容易に區別される。

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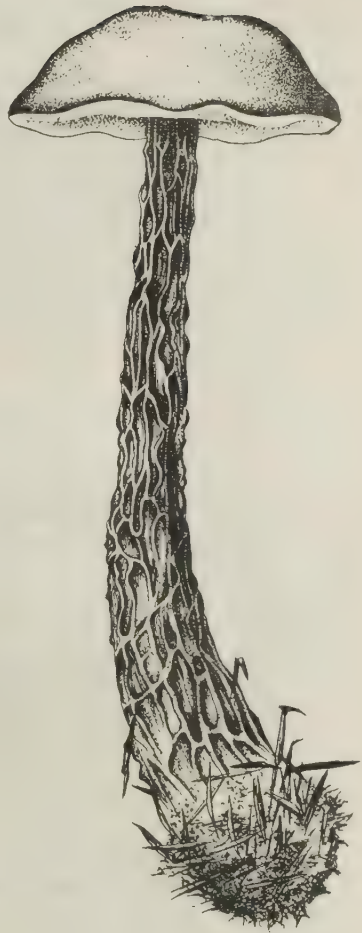


Fig 15. *Boletellus Russellii* (Frost) Gilbert (×1/2)

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マイクロカードの利用と菌類目録 -Microcard and publication of Index of Fungi.

マイクロカード(マイクロフィルム)が簡単に、しかも廉價に製作せられ、その投影装置も内外に於て商品として販賣せられるようになった今日、文献の複写もこの方法によるものが次第に多くなり、我國の圖書館其他で研究者の求めに應じて、その機關に所藏の圖書は勿論、他の機關より文献借用の勞までとる程の親切な箇所も出来て來た。例へば學術研究會議内の圖書課ではこの仕事を本年より始め、利用者も少しづつあるようである、菌類文献のマイクロカードの一例としては Fries 著の *Systema Mycologicum* 及び *Elenchus Fungorum* 全4巻が発賣されている(價. 8.40 ドル、發賣所 Microcard Foundation, Middletown, Connecticut)。この價格を 1952 年に Johnson Reprint Corporation (125 East 23rd. Street, New York) で出版された同書の覆刻版の價格 60 ドルに比べると約7分の1になる。

次に Saccardo の *Sylloge Fungorum* も最後の第25巻(1931)までで出版が中止されて居り、一時アメリカでこの事業を受繼ぐという話もあつたが實現に至つて居ない。處で英國の Commonwealth Mycological Institute (Ferry Lane, Kew, Surrey) で 1940 年以來菌類の新種、新組合せ、新名等をまとめて毎年 *Index of Fungi* を出して居る(年價格5シリング、又は1ドル) これと並行して毎年すべての新屬、種等の記載(圖も含まれると思ふ)を原文献からマイクロカードに轉寫して發賣する計畫があり、全世界の菌類分類學者に轉寫の承認を求めて來た。(小林記)

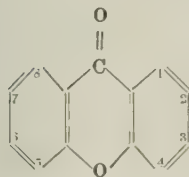
キサントン誘導体の抗結核菌性に就て*

初田勇一・久山眞平・杉山素子・小森静世

Yuichi HATSUDA, Shimpei KUYAMA, Motoko SUGIYAMA & Shizuyo KOMORI: On the Effect of Xanthone Derivatives against Tubercle Bacillus Strain

著者等¹⁾は先に *Aspergillus versicolor* (Vuillemin) Tiraboschi の代謝生産物として一新物質を単離し, Sterigmatocystin と命名した。更に本物質の脱メチルによつて得た物質が 1.3.8-trihydroxy xanthone であることを確認した。

Sterigmatocystin および 1.3.8-trihydroxy xanthone の人型結核菌その他の抗酸性菌に対する抗菌力を検討した結果, 後者が著しい抗菌力を有することを認めた。これと類似の Xanthone 誘導体も抗菌力を有することが予想されるので次の9種の物質について人型結核菌に対する抗菌力を調べた。



- 1-hydroxy xanthone
- 1.3.-6trihydroxy xanthone
- 1.3.-7trihydroxy xanthone
- 1.3.8-trihydroxy xanthone
- 1.3.6.8 tetrahydroxy xanthone
- 1.3.5.7 tetrahydroxy xanthone
- 1.3.5.8 tetrahydroxy xanthone
- 1.3.6.7 tetrahydroxy xanthone
- 1.8.5.6 tetrahydroxy xanthone

これらの中で 1.3.8. および 1.3.6 trihydroxy xanthone 以外の物質は既知の物質であるので文献に従つて合成した。

即ち 1. hydroxy xanthone は Kostanecki, Nessler 法²⁾ 1.3.7-trihydroxy-xanthone は篠田法,³⁾ tetrahydroxy xanthone は棚瀬法⁴⁾によつて合成した。

抗菌性試験に於て菌種は人型結核菌 H37RV 株, 培養基は Kirchner および Dubos 培養基を用い, 稀釋法によつてその發育を完全に阻止する稀釋倍數を検した。その結果何れも可成りの抗菌性を有することを認めた。

* 文部省科學研究費による研究

實 験 之 部

I. 1.3.6-trihydroxy xanthone の合成

1.6. dihydroxyfluorone hydrochloride: β . resorcyraldehyde 1.38g. 無水 phloroglucin 1.26 g を氷醋酸 11 c.c. に溶解し、之に濃鹽酸 4.5 c.c. を加え、砂浴上で15分間煮沸する。一夜放置後生成した赤色沈澱を濾過し、氷醋酸で洗滌する。鹽酸含有50%醋酸で再結する。朱褐色微細な粉末 收量 2.2 g 融點 360° 以上(270° で褐變) ベンゼンに不溶、含水アルコールに溶ける。アルカリに赤色に溶解する。實驗値: C, 58.48; H, 3.52. 計算値: $C_{15}H_8O \cdot HCl$ として C, 58.97; H, 3.40.

1.3.6-trihydroxy xanthene; 活性炭 0.5g をアルコール 20c.c. に懸濁し、之に1% 鹽化パラジウム溶液 25c.c. を加へ水素の吸収がなくなる迄振盪した後、1.6.dihydroxy fluorone hydrochloride 1g を 94% アルコール 80c.c. に溶解して加へ振盪する。ほぼ計算量の水素を吸収して濃赤色の液は殆ど無色となる。速かに濾過してアルコールを減壓で溜去すれば結晶を残溜する。水で再結する。收量 0.8g 黄褐色針狀晶 融點 $255-6^{\circ}$ 熱水に溶け、冷水に難溶、ベンゼンに難溶、アルコールに易溶、鹽化鐵では殆ど着色しない。實驗値: C, 67.43; H, 4.45. 計算値: $C_{15}H_{10}O_4$ として C, 67.80; H, 4.38

1.3.6. trihydroxy xantene triacetate: 1.3.6. trihydroxy xanthene 0.4g に無水醋酸 10c.c. を加へ 30 分間煮沸後水中に投入し生じた結晶を濾過、水洗、乾燥し醋酸エーテルで再結晶後、アルコールで反覆再結晶する。收量 0.4g 無色針狀晶 融點 $120-1^{\circ}$ 實驗値: C, 63.85; H, 4.63. 計算値: $C_{19}H_{16}O_7$ として C, 64.02; H, 4.53

1.3.6. trihydroxy xanthon triacetate: 1.3.6. trihydroxy xanthon triacetate 0.3g を氷醋酸 7c.c. に溶かし、 CrO_3 0.11g を加へ $40-45^{\circ}$ で 3 時間保つ。後水中に投入すれば無色の結晶を析出する。アルコールで再結晶する。無色柱狀晶 收量 0.23g 融點 172° 熱アルコールに可溶、ベンゼンに易溶、實驗値: C, 61.77; H, 3.60. 計算値: $C_{19}H_{14}O_8$ として C, 61.60; H, 3.81

1.3.6. trihydroxy xanthone: 1.3.6. trihydroxy xanthon triacetate 0.18g アルコール 20c.c. 35% 鹽酸 0.5g を加へ、水浴上で一時間煮沸する。アルコールを溜去し、水を加へれば結晶析出する。アルコールで再結晶する。收量 80 mg 淡黄褐色針狀晶、融點 308° アルカリに黄色に溶け、ベンゼン、水に難溶、アルコールに易溶。アルコール溶液は鹽化鐵で赤褐色を呈す。實驗値: C, 63.81; H, 3.64. 計算値: $C_{15}H_8O_5$ として C, 63.91; H, 3.30

II. 1.3.8 trihydroxy xanthone の合成

1.8.-dihydroxyfluorone-hydrochloride: γ . resorcyraldehyde 1.38 g と無水 phloroglucin 1.26g を氷醋酸に溶解し、濃鹽酸 4.5 c.c. を加へ、砂浴上で 20 分間

煮沸し、一夜放置後濾過すると濃赤色粉末を得る。

之を鹽酸含有の 50% 醋酸で再結する。融點 288° (分解) 濃赤色の微細な柱狀品。收量 2.0 g アルコールに可溶, アセトン, 水に難溶, エーテル, ベンゼンに不溶である。アルカリに濃赤色, 濃硫酸に赤色に溶ける。アルコール溶液は鹽化鐵で赤色を呈す。實驗値: C, 58.65; H, 3.92. 計算値: $C_{13}H_8O_4 \cdot HCl$ として C, 58.97; H, 3.40.

1.3.8. *trihydroxy xanthene*: アルコール 20 c.c. に活性炭 0.5 g 1% 鹽化パラジウム溶液 2.5 c.c. を加へ水素中で、水素の吸収がなくなる迄振盪する。次に 1.8 dihydroxy fluorone hydrochloride 1 g をアルコール 80 c.c. に溶解して加へ、接觸還元を行ふ。直ちに水素 85 c.c. (1 mol) を吸収して濃赤色の液は無色となる。濾過して減壓でアルコールを溜去すれば結晶を得る。冷水で洗滌後熱水で再結する。融點 222° 淡黄褐色, 針狀品, 收量 0.7 g アルコール, アセトンに易溶, エーテル・ベンゼンに難溶, 熱水に可溶, 冷水に難溶である。アルコール溶液は鹽化鐵で弱く青色を呈す。實驗値: C, 67.73; H, 4.33. 計算値: $C_{13}H_{10}O_4$ として C, 67.80; H, 4.38.

1.3.8. *trihydroxy xanthene triacetate*: 1.3.8 trihydroxy xanthene 0.6 g に無水醋酸 10 c.c. を加へ 30 分間煮沸後、水中に投ずれば結晶が析出する。之をアルコールで再結する。融點 $182 \sim 3^{\circ}$ 無色針狀品。收量 0.6 g アセトン・ベンゼンに易溶, アルコール・エーテルに可溶, 水に不溶, アルコール溶液は鹽化鐵反應なし。實驗値: C, 64.27; H, 4.73. 計算値: $C_{19}H_{16}O_7$ として C, 64.02; H, 4.53.

1.3.8. *trihydroxy xanthone triacetate*: 1.3.8 trihydroxy xanthone triacetate 0.3 g を水醋酸 20 c.c. に溶かし、無水クロム酸 0.4 g を加へ $40 \sim 45^{\circ}C$ に 6 時間温め、後水中に投入すれば結晶が析出する。之をアルコールで再結する。融點 193.5° 無色針狀品。收量 0.2 g アセトン・ベンゼンに易溶, アルコール・エーテルに可溶, 水には不溶, アルコール溶液は鹽化鐵反應なし。實驗値: C, 61.71; H, 3.79. 計算値: $C_9H_{18}O_8$ として C, 61.60; H, 3.81.

1.3.8. *trihydroxy xanthone*: 1.3.8 trihydroxy xanthone triacetate 22 mg をアルコール 10 c.c. に溶かし、濃鹽酸 0.5 c.c. を加へ 2 時間煮沸後アルコールを溜去し、水を加へて析出する結晶を濾別しベンゼンで再結した後、昇華によつて精製する。融點 265° 微黄色板狀品。收量: 14 mg アルコール, アセトンに易溶。エーテル, ベンゼン・水に難溶, 苛性アルカリに黄色, 濃硫酸に黄色に溶ける。アルコール溶液は鹽化鐵で汚綠色を呈する。實驗値: C, 64.30; H, 3.19. 計算値: $C_{11}H_8O_5$ として C, 63.93; H, 3.28.

III. 試 験 方 法 キサントン誘導体の抗結核菌性

使用菌: *Mycobacterium tuberculosis hominis* H 37 Rv.

培養基: 次の 2 種の培養基を用いた。

Kirchner 培養基

Na_2HPO_4	3 g
KH_2PO_4	4 g
glycerin.....	20 c.c.
Mg SO_4	0.6 g
Na. Citrate $2\text{H}_2\text{O}$	2.5 g
Asparagin.....	5 g
Aq. dest	1000 c.c.

以上をオートクレーブで 15 ポンド 15 分間殺菌し、之に 100 c.c. の血清を無菌的に加へる。

Dubos 培 養 基⁹⁾

Asparagin	1.0 g
$\text{Na}_2\text{HPO}_4 \cdot 12\text{H}_2\text{O}$	6.3
KH_2PO_4	1.0
Na. citrate $\cdot 2\text{H}_2\text{O}$	1.5
Ferric ammonium citrate	0.1
$\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$	0.6
Tween 80	0.5
Aq. dest.....	1000c.c.

以上をオートクレーブで15ポンド、15分間殺菌し、之に牛血清アルブミン液* 200 c.c. を無菌的に添加する。

*牛血清アルブミン液⁹⁾：牛血清を N-HCl にて酸性となし (PH2.0 から 2.5), これを 65°C から 70°C の水浴中で 20 分間加熱し、冷後 0.1N-NaOH にてPH 6.5 にもどすと globulin が沈降する。これを遠心分離を行ひ除去し、無菌的に濾過する。

何れの培養基も試験管に 4.5 c.c. 宛無菌的に分注する。

培養：Kirchner 培養基に於ては、菌を水晶球を入れたフラスコに一定量とり、之に菌量が $1\text{mg}/1\text{c.c.}$ になる様に滅菌水を加へ振盪して平等菌液とし、その 0.1 c.c. をとり各試験管に添加する。37° で 4 週間培養後に判定する。

Dubos 培養基に於ては、菌 1 白金耳を培養基に接種し、37° で 12 日間培養した濁液を更に新しい培養基に接種し 12 日間培養して、平等菌液とし、比濁法により $1\text{mg}/1\text{c.c.}$ の菌液をつくり、之を各試験管に 0.1 c.c. 宛加へる。37° で 10 日間後に判定する。

結 果

Xanthone 誘導体が人型結核菌 H 37 RV を完全に阻止する濃度は次の如くである。

供試検体	稀釋倍率	20,000 × 10,000 × 60,000 × 80,000 × 100,000 × 200,000 ×					
1. hydroxy xanthone	K	—	—	—	—	++	++
	D	—	—	—	++	++	++
1.3.6 trihydroxy xanthone	K	—	—	—	+	++	++
	D	—	—	+	++	++	++
1.3.7 trihydroxy xanthone	K	—	—	—	++	++	++
	D	—	—	+	++	++	++
1.3.8 trihydroxy xanthone	K	—	—	—	—	++	++
	D	—	—	—	—	++	++
1.3.5.8 tetrahydroxy xanthone	K	—	—	+	++	++	++
	D	—	—	++	++	++	++
1.3.6.7. tetrahydroxy xanthone	K	—	—	—	—	++	++
	D	—	—	—	+	++	++
1.3.5.6 tetrahydroxy xanthone	K	—	—	—	++	++	++
	D	—	—	+	++	++	++
1.3.6.8 tetrahydroxy xanthone	K	—	—	—	++	++	++
	D	—	—	—	++	++	++
1.3.5.7 tetrahydroxy xanthone	K	—	—	+	++	++	++
	D	—	—	+	++	++	++

註 K は Kirchner 培養基 D は Dubos 培養基。

本研究にあたり終始御懇篤なる御指導を賜はつた小南清所長、藪田貞治郎博士に厚く感謝する。

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Enumerations of the Moulds of Japan III

By

Kiyosi KOMINAMI, Yosio KOBAYASI and Keisuke TUBAKI

小南 清, 小林義雄, 椿 啓介: 日本産黴類の研究 III

19. *Mucor lamprosporus* Lendner (Mucoraceae)

Muc. d. l. Suisse, p. 92, fig. 33 (1908); Zycha in Krypt. Fl. Mark Brandenburg VIa Pilze II: 56 (1935); Naumov in Encycl. Mycol. IX Clés Mucorinées p. 36 (1939). ? *Mucor Bordrechai* Schmidt, in Jahrb. f. wiss. Bot. LXIV: 544 (1925).

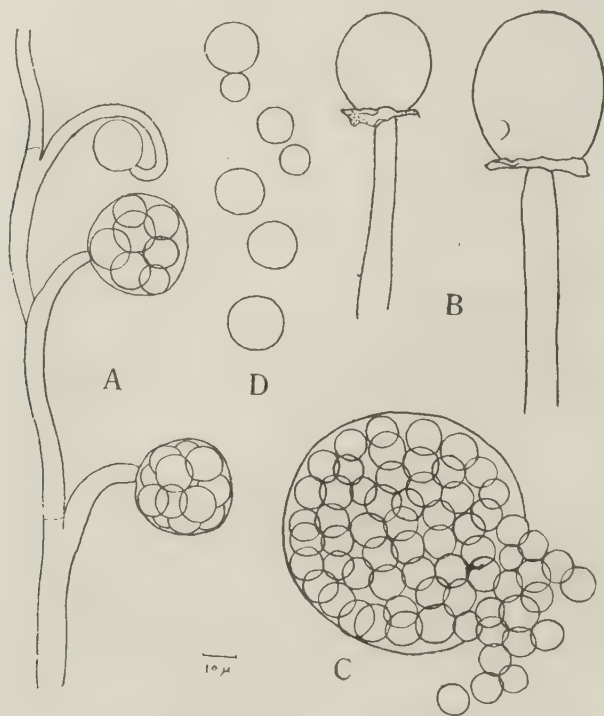


Fig. 16. *Mucor lamprosporus*

A. Sporangiophore and sporangioles. B. Columella
C. Sporangium D. Sporangiospores

Colony on malt extract agar growing rapidly, dense, attaining to a height of 2-3 cm, at first white, then pale brown, after maturity of sporangia becoming pale brown, reverse uncoloured. Sporangiphores irregularly branched, erect or sometimes noded $6.5-15$ (20) μ in diam., hyaline or yellowish tint. Terminal sporangia spherical with deliquescent wall, $60-90$ μ in diam., pale brown, collar left on sporangiphores. At lower portion of the colony, sporangia (sporangioles) spherical, abundantly produced on nodding sporangiphores, with not deliquescent wall, $30-40$ μ in diam., pale brown. Columella globose or ovoid, $18-25$ μ long, smooth, hyaline or pale yellow. Chlamydospores and zygospores not observed. Sporangiospores ovoid or sometimes irregularly shaped, $8-12$ (15) μ in diam., thin walled, hyaline. At 37°C , rapidly growing.

Hab. Isolated from soil of Mt. Huzi (K. Tubaki, Aug., 1952).

This species resembles to *M. petrinsularis* in shape and size of sporangiospores, differing, however, in the shape of branchlet of sporangiphores and presence of sporangioles.

20. *Mucor subtilissimus* Oudemans (Mucoraceae)

in Nederl. Kruidkung. Arch. III: 435 (1898), Abb. bei Nadson u. Philippow (1925); Zycha in Krypt. Fl. Mark Brandenburg VIa Pilze II: 70. pl. 17 (1935). Syn. *M. Guilliermondii* Nadson et Philippow.

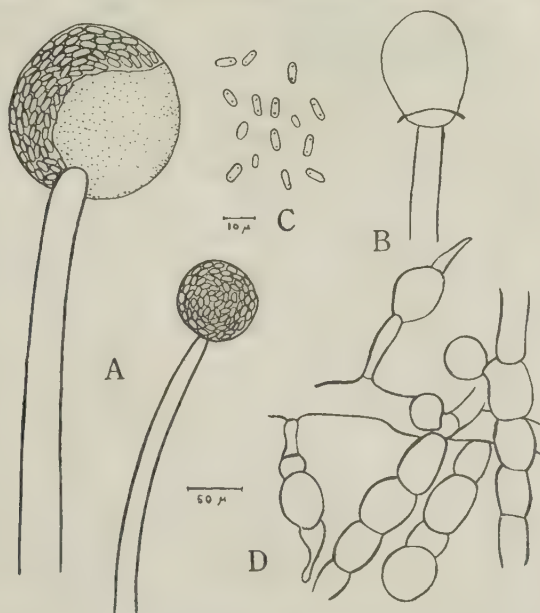


Fig. 17. *Mucor subtilissimus*

A. Habit B. Columella C. Sporangiospores D. Chlamydospores

Colony on malt extract agar growing tenderly, attaining to 2 cm or more in height, at first white, then becoming pale gray, reverse uncoloured. Sporangiophores simple, $5.0\text{--}7.0$ (10.0) μ in diam. Sporangia spherical with deliquescent wall $25\text{--}65$ μ in diam., brownish yellow. Columella ovoid or cylindrical, $19\text{--}25.5$ (30) μ long, pale brown, collar left on sporangiophores. Sporangiospores elliptical or cylindrical with two oil drops, $4.5\text{--}6.5 \times 2.0\text{--}3.5$ μ , sometimes irregularly shaped after maturity. Chlamydospores produced intercalary or terminally on submerged hyphae, variously sized.

On potato agar, turf attaining to 3 cm in height, reverse uncoloured. At 37°C , no growth.

Hab. Isolated from soil of Kiyose-Mura, Tokyo (K. Tubaki, 1950–NI. 1298).

This mould grows between $4^{\circ}\text{--}37^{\circ}\text{C}$, differing from the Zycha's description.

21. *Mucor petrinsularis* Naumov (Mucoraceae)

in Encyclop. Mycol. IX Clés Mucorinées p. 39 (1939); Zycha in Krypt. Fl. Mark Brandenburg VIa Pilze II: 55 fig. 14 (1935).

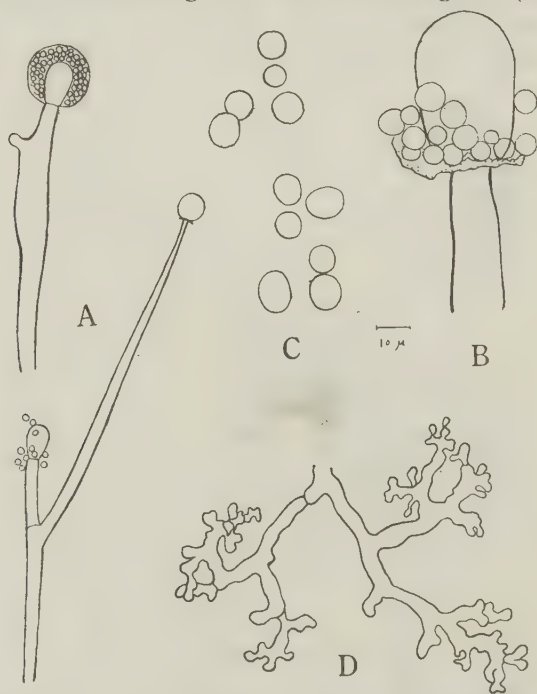


Fig. 18. *Mucor petrinsularis*

A. Habit B. Columella C. Conidia D. Submerged hypha

Colony on malt extract agar growing dense, turf attaining to a height of 2 cm, at first white, becoming brownish gray, reverse uncoloured. Sporangiophores erect, monopodially or sympodially branched, 20–35 μ in diam., sometimes enlarged under the columella to 40–75 μ in diam., opaque, hyaline or pale brownish tint. Collar left on sporangiophores, brown or almost black. Sporangia spherical with deliquescent wall, 55–110 μ in diam., delicately spinulated, brown coloured. Fragments of disintegrated wall remaining around columella or sporangiophores. Columella pyriform or ovoid, 30–60 (80) μ long, pale brown. Sporangiospores globose or ovoid, 6.5–13 (15) μ in diameter. Submerged hyphae irregularly branched, commonly without chlamydospores.

On potato agar, attaining to a height of 10 mm, rapidly sporulating at center of colony; sporulating area gray or gray-black, reverse uncoloured or grayish tint. At 37°C, growth slightly, 2–5 mm high.

Hab. Isolated from mustard-powder (K. Tubaki, 1950-NI. 1201).

This species resembles to *M. lamprosporus*, differing, however, in branching of sporangiophores and adhesion of disintegrated wall of sporangia.

22. *Mortierella pusilla* Oudemans var. *atrogrisea* (van Beyma) Zycha (Mortierellaceae)

in Mitt. d.C.B.S., p. 26. f. 90 (1929); Zycha in Krypt. Fl. Mark Brandenburg VIa Pilze II: 198 (1935). Syn. *Mortierella atrogrisea* v. Beyma.

Colony on malt extract agar rapidly growing to thick felt with a height of 3 cm, at first white, becoming Drab-Gray to Deep Grayish Olive when matured. Sporangiophores rarely branched at lower portion, 2.0–3.5 (4.0) μ in diam., tapering to apex, containing numerous oil drops. Sporangia spherical with deliquescent wall, 10–25 (30) μ , collar left on sporangiophores, olive green. Sporangiospores globose, polyhedral or irregularly shaped, smooth, 1.5–3.0 μ in diam. Submerged hyphae branched, with oil drops, 2.0–10.0 μ in diam. Chlamydospores present on submerged hyphae, intercalary or terminal, globose to large vesicular shape, 10 μ or more longer.

On potato agar, equally growing as on malt agar, white to Olive Brown, center of the colony elevated and Drab coloured, reverse yellowish. At 37°C, growth slowly, producing white yeast-like colony.

Hab. Isolated from subsoil of Suiren-Pond, Hakkôda (Y. Kobayasi Sept., 1952)

This species is distinguished from other varieties of *Mortierella pusilla* by its olive colour.

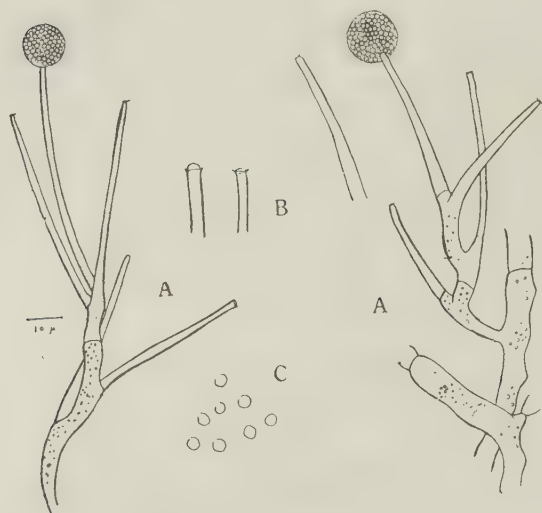
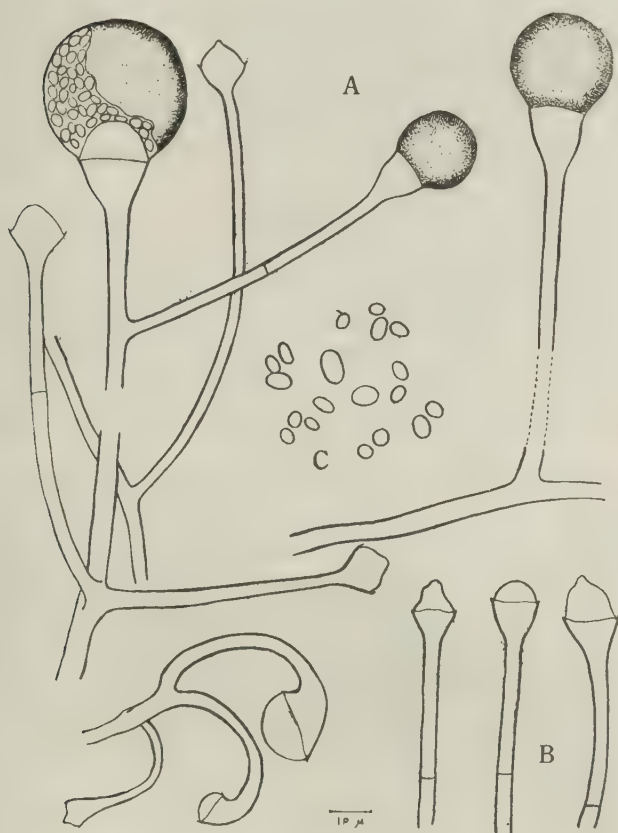


Fig. 19. *Mortierella pusilla* var. *atrogrisea*
A. Habit B. Sporangiophores C. Sporangiospores

23. *Absidia ginsan* Saito (nomen nudum)

Colony on malt extract agar, rapidly growing to a height of 10–20 mm, somewhat restricted, at first white, becoming brownish to Olive-Buff, reverse pale Olive-Buff. Aerial hyphae repeatedly and irregularly branched, opaque, $7.0\text{--}9.5\ \mu$ in diam., with arching stolons and rhizoids. Submerged hyphae spread in agar with shape of repeated semicircle, $5.0\text{--}7.5\ \mu$ in diam., hyaline or pale brown. Sporangiophores erect, at first simple, then symmetrically or laterally branched, commonly septate, $7.5\text{--}13.0\ \mu$ in diam., hyaline or pale brown. Lateral branches commonly short and circinated, especially at lower area of colony, rarely branched, $3.0\text{--}5.5\ \mu$ in diam. Sporangia spherical with scarcely deliquescent wall, terminal one $40\text{--}50$ (60) μ in diam., lateral one $15\text{--}40\ \mu$ brown-black. Columella smooth with adhering collar, hemi-spherical, $19.5\text{--}30\ \mu$ in diam.; conical or hemispherical with or without an apical projection, $8.5\text{--}14.5$ (20) μ in diam., hyaline or pale brown. Sporangiospores various in shape and size, ovoid, long-ovoid or ellipsoidal, $5\text{--}10$ (11.0) $\times$ $3.0\text{--}5.5$ (7.0) μ (in terminal sporangia), $3\text{--}5 \times 2.5\text{--}3.0\ \mu$ (in lateral sporangia), smooth, hyaline. Chlamydospores and zygospores not observed.

Fig. 20. *Absidia ginsan*

A. Habit B. Columella C. Conidia

This strain (NI. 1251), which was received from Mr. Kawada of the Government Forest Experiment Station is kept in Sakaguchi's laboratory, Faculty of Agriculture of Tokyo University, with the name "*Absidia ginsan* Saito" strain No. Ab-5, formerly originated from Central Laboratory, South Manchuria Railway Co. of Dairen.

This species is quite near *Ab. hyalospora* (Saito) Lendner in shape of branchlet of sporangiophores, shape of sporangia, spores and columella, but we can find a slight differences in colony appearance and colony color, sizes of sporangia and spores in compared with the preserved

strain "*Absidia hyalospora* NI. 1006" which was isolated by Dr. Naganishi. However, neither of the author name nor of the description of *Absidia ginsan* are distinct to us. According to Dr. Saito's personal communication, he has had no hand with the name.

After all, this species may be conspecific with *Absidia hyalospora*.

24. *Neurospora tetrasperma* Shear et Dodge (Melanosporaceae)

in J. Agr. Res., XXXIV : 1019 (1927)

On malt extract agar, growth rapidly, broadly spreading. Aerial hyphae scanty, ascending to the wall, irregularly branched, septate, with numerous oil drops 3-11 μ or more in diam., at first white, then pale yellow to pale salmon coloured. Sporogenous hyphae dichotomously or irregularly branched, septate, becoming to conidiophores when matured. Conidia catenulate, loosely connected, globose to subglobose, smooth, thin walled, 7.5-11.5 μ in diam., hyaline or pale salmon coloured.

Perithecia numerous produced, gregarious or scattered, superficial or immersed in agar media, with sparse hairs, 200-320 μ in diam., at first yellowish, becoming to almost black, with thick and subcoriaceous wall; ostiole obtuse, papillate; paraphyses septate and collapsing when matured. Asci oblong or cylindrical, persistent, 130-230 $\times$ 15-19 (23) μ , with uniseriate four ascospores. Ascospores ellipsoid or oblong, with several longitudinal ridges, 28-32 (36) $\times$ 10-15 μ , at first olivaceous, later becoming almost black. Homothallic. At 37°C, growth rapidly.

Hab. Isolated from Japanese cherry of Meiji Shrine, Tokyo (K. Kominami, 1949-NI. 2046).

This species differs from *Neurospora Toroi* Tai (ascus with 4-ascospores) in size of perithecia and asci.

25. *Candelospora penicilloides* Tubaki sp. nov. (Moniliaceae)

Coloniae in cultu in agar-agar wort rapide effusae, floccosae, albae, reverso "Mass Yellow", "Towny" vel "Chestnut-Brown". Hyphae aerales laterales, septatae laeves, hyalinae 2.5-3.5 (8.0) μ in diam. Hyphae submersae irregulariter ramosae septatae, crassiparietales 2.5-6.5 μ in diam., hyalinae, denique "Mass Yellow". Conidiophora ex hyphis submersis oriunda erecta, apice bi-vel triverticillata septata, 16-40 $\times$ 4.0-6.5 μ . Phialides lageniformes rostratae crassiparietales 1-sterigmatae, 12.0-15.0 $\times$ 2.5-5.5 μ . Conidia cylindrica recta 3-septata, 33-62 $\times$ 4.0-6.0 μ , hyalina. Chlamydosporae e hyphis submersis productae, singulares vel catenatae sphaericae aut obovatae 10-20 μ in diam., "Towny".

Colony on malt extract agar, broadly growing, floccose, white, reverse Mass Yellow, Towny to Chestnut-Brown. Aerial hyphae laterally branched, septate, smooth, 2.5-3.5 (8.0) μ in diam., hyaline.

Submerged hyphae, irregularly branched, septate, thick walled with numerous oil drops, sometimes hyphal-fusion observed, $2.5-6.5\ \mu$ in diam., hyaline to Mass Yellow. Conidiophores erect branched, septate, short, $16-40 \times 4.0-6.5\ \mu$, hyaline, bearing a dense fascicle of conidia on the end-branches. End-branches (phialids) thick walled, lageniform, rostrate, $12-15 \times 2.5-5.5\ \mu$, bearing single conidium. Conidia cylindrical,

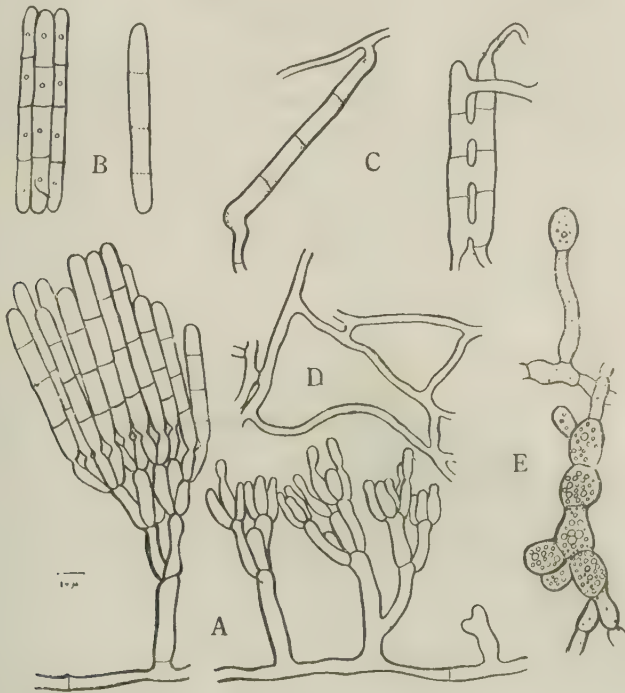


Fig. 21. *Candelospora penicilloides*

- A. Habit B. Conidia C. Germination of conidia
D. Hyphal fusion E. Chlamydospores

straight, 3-septate, $33-62 \times 4.0-6.0\ \mu$, hyaline, containing numerous minute granules. Conidial mass being packed together closely by means of the hyaline, thin mucilaginous membrane of each cell.

Germ tubes produced from each ends of conidia when immersed in water at 25°C . Chlamydospores formed on submerged hyphae, sphaerical or obovate, simple or catenate, $10-20\ \mu$ in diam., tawny coloured.

On potato agar, spreading, floccose, growth white to pale cream coloured, reverse brown.

On Czapek's agar, broadly growing to a height of 3 mm, floccose, white, reverse and agar Mahogany Red. This production of pigment seems to be characteristic to this species and remarkable on Czapek's agar.

Ravendamm reaction positive at 25°C.

Optimum temperature 20–23 C, poorly growing at 30°C.

Hab. From leaves of *Prunus* sp. collected by Miss M. Ookubo, in Island Hatizyo (K. Tubaki, 1952).

Candelospora illicicola Hawley (on leaves of *Ilex*, of Ireland) and *C. citri* Fawcett et Klotz (on decayed portion of orange fruit, of Florida) have been known as the members of the present genus. The new Japanese species can be distinguished from the former by verticillate end branches and destitute of mucous head, and from the latter by white mycelial mass and destitute of terminal swollen cell on hypha. This genus has some resemblances with *Moeszia*, which has, however, simple and continuous conidiophore.

26. *Sepedonium chrysospermum* (Bull.) Fr. (Moniliaceae)

in Rabenhorst, Krypt. Fl. Pilze VIII: 219 (1907); Sacc. Syll. Fung. IV: 146 (1886); Saito, Atm. Pilzkeime (1904); Gilman, Soil Fungi p. 272 (1944). Syn. *Mucor chrysospermum* Bull.; *Sepedonium chrysospermum* Fries; *Sepedonium mycophilum* Link.

Colony on malt extract agar, broadly spreading to a thin powdery felt to height of 1–1.5 mm, with white margin, at first white, becoming Light Cadmium to Xanthine Orange, reverse same yellowish coloured. Aerial hyphae irregularly branched, septate, 3.0–5.5 μ in diam., pale orange coloured, spreading over the surface of agar to thin layer. Conidiophores erect from aerial hyphae, symmetrically or laterally branched, commonly septate, beneath the septum thickend, 4.0–4.5 μ in diam., bearing two types of conidia. Thin walled conidia, ellipsoid or pyriform, loosely grouped at the ends of long end-branches, 9.0–11.0 $\times$ 4.5–6.0 μ , hyaline. Thick walled chlamydospore-type conidia, spherical, conspicuously verrucose, with a large oil drop, 11.5–16.0 μ in diam., Light Cadmium, single on side-branches.

On potato agar, growth same with that on malt agar.

On Czapek's agar, growth poor.

Optimum temperature 25°C, no growth at 37°C.

Hab. Isolated from pileus of fruitbody of *Boletus subtomentosus*, Mt. Hakkôda (Y. Kobayasi, Aug., 1952).

This species is distinct from any other members of the genus by characteristic colour and large size of chlamydospore-type conidia.

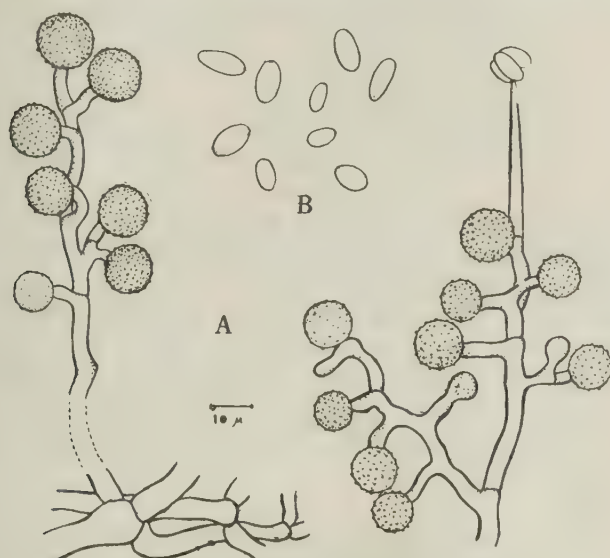


Fig. 22. *Sepedonium chrysospermum*
A. Habit B. Conidia

The 7th Edition of "Bergey's Manual of Determinative Bacteriology" の發行について Bergey's Manual は 1923 年初版發行以來 版を重ねる毎に内容充實し 第6版(1948年)は二段組にして 1529 pp. という龐大なものとなつて研究者の座右に欠くべからざるものであつたが遠からず第七版發行の運となつた様子である。

最近編纂委員 Prof. Breed 氏から去る 4 月 Boston で催された 4th Annual Bergey Manual Dinner に於ける改版打合の模様を記録した通信が寄せられた。それによると二巻に分れ、第一巻は 'Manual Proper' で主として檢索に便ならしめる爲種の記載に重きを置き異名其他不用の記述及び Appendixes は第二巻に移されてゐる。第二巻は 著者名、出所(起原)、産地等を含んだ 種の歴史的及び文献的記録並びに學名索引異名目録を網羅して 'Index Bergeyana' となつてゐる。斯くして第一巻は度々改訂を加へて學生用に供し第二巻は長期に渉つて改訂の要なく 新資料の追加、正誤等は必要に應じ補遺巻を出版して利用者の負擔を軽くする等周到な注意が拂はれてゐるので研究者にとつて非常に便利なものとならう。

内容を詳細に紹介する紙面を持たないので主要な點二三を擧げて見る。第一に藍藻類バクテリア及びバイラス等一群の生物を動物界(Animal Kingdom)及植物界(Plant Kingdom)から切り離して獨立の Kingdom にする爲め目下適切な名を研究中であると云ふ。Haeckel の名けた Protista 又は Moneres 等は満足すべき名でないから最近提唱されたものゝ中から撰定する様考慮中であるとの事。此の Kingdom を Schizomyceta と Myxophyta (又は Cyanophyta) の二門に分けバクテリアとバイラスを前者に包含する。次に現行の Order Eubacteriales を二分して極生鞭毛を有する Pseudomonadales と周生鞭毛を有する Eubacteriales の二目に分けること Nitrobacteriaceae と Pseudomonadaceae 兩科を合併すること等分類形式の細目にわたつて面目の一新を思はせられるものが多い。發行予定日は記されてないが一日も早く出版される様待望して止まない。

(小南 清)

Studies on the Sporobolomycetaceae in Japan :

II. On *Itersonia*

By

Keisuke TUBAKI

椿 啓 介：日本産スポロボロミセス科の研究 II. イテルソニア属

In continuation to the preceding paper¹⁾ on the genus *Tilletiopsis*, a member of *Itersonia*, which was isolated from the leaves of various kinds of plants in Japan, is reported here.

The genus *Itersonia* was established by Derx²⁾ in May, 1948, with a type species *Itersonia perplexans* Derx, which had already been isolated in 1925 from a leaf of *Althaea rosea*. In 1949, Nyland³⁾ added one more species, *Itersonia pyriformis*, which was found on dead leaves of *Acer macrophyllum*. L. S. Olive⁴⁾ has recently published a cytological paper on *It. perplexans*.

Derx's original description on *Itersonia* is as follows:

Itersonia Derx; Mycelium hyalinum, septatum, repens, fibuligerum ut typice in Basidiomycetibus; inflationibus terminalibus denique post excrescentionem terminalem saepe intercalaribus; sporophoris in aera ascendentibus, nonsamosis, apicem versus sensim attenuatis, in sterigma exeuntibus. Sporae solitariae, terminales, asymmetricae, unol atere plus minusve depressae, crassiusculae, non-falcatae, leves, hyalinae. Species typica: *Itersonia perplexans* Derx.

J. Lodder⁵⁾ gave some additions to the generic definition.

"No yeast cells. Septate hyaline mycelium forming clamp-connections connected with swollen terminal cells which after further growth may become intercalary. Aerial sporophores, not ramified, at the apex thinner and changing gradually into sterigmata on which develop ballistospores singly and terminally. They are assymmetrical but not sickle shaped rather thick, smooth, hyaline, at one side slightly dented." It will be clear from above description that this genus is not belong to the yeast. About their classification and life cycle, it will be considered on subsequent reports.

By spore fall method, the writer isolated two strains of *Itersonia* in Nov. 1951 and six strains in spring, 1952 from the following leaves.

Number of cultures	Host	Date of Isolation	Locality
712-2	<i>Akebia trifoliata</i>	Nov., 26 (1951)	Mt. Otake
713-1	<i>Rhododendron japonicum</i>	" " "	"
756-2	<i>Potentilla Freyniana</i>	March, 13 (1952)	Hachijo Island
758-2	<i>Hedera japonica</i>	" " "	"
759-1	"	" " "	"
768-1	<i>Osmunda</i> sp.	April, 17 (1952)	Mt. Amagi
771-1	<i>Dryopteris</i> sp.	" " "	"
773-1	"	" " "	"

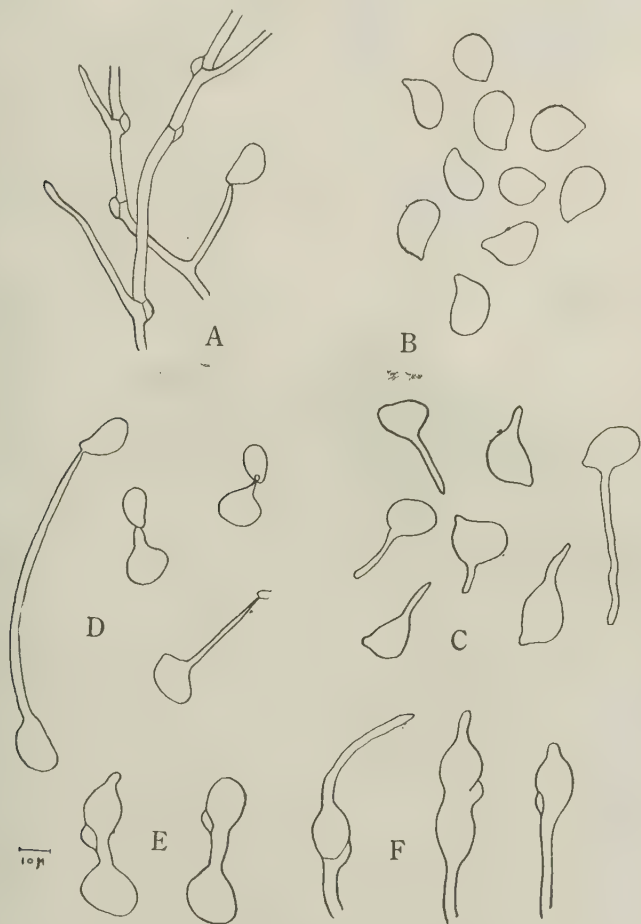


Fig. 23. *Itersonilia perplexans*

- A. Habit B. Ballistospores C. Germination of ballistospores
 D. Direct formation of ballistospores E.F. Sporogenous cells

Morphologically, all of the cultures isolated were found to be the same with *Itersonilia perplexans* Derx, with the slight differences about the production of aerial mycelium and spore size. The writer's description is as follows.

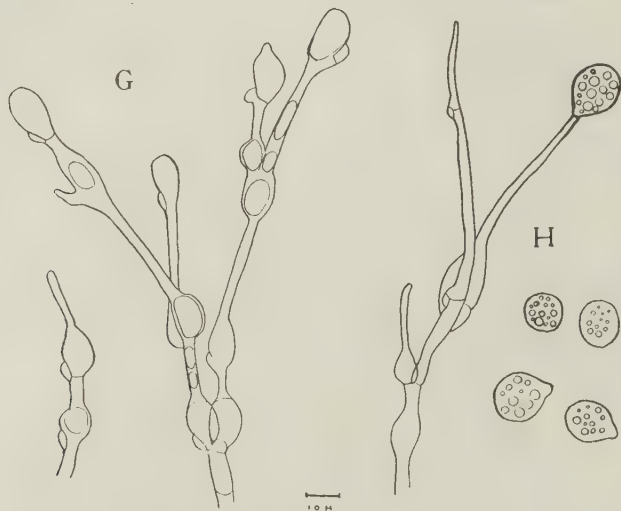


Fig. 24. *Itersonilia perplexans*

G. Successive formation of sporogenous cells

H. Chlamydospore-type cells

Itersonilia perplexans Derx.: Colony on malt extract agar spreading, coned at centre, appressed, fluffy and tough with numerous hyphal developments, at first white, then faintly tinted with tan, reverse uncoloured. Submerged hyphae irregularly branched, having clamp-connection at each septum, $1.5\text{--}2.0$ (3.0) μ in diam., hyaline. Aerial hyphae, composed primarily of branching hyphae with clamp-connections at the septa, bearing vegetative hyphae. Vegetative hyphae thread like, $1.5\text{--}2.5$ μ in diam., terminated by sporogenous cells (inflated cells) with clamp-connections at their base. The sporogenous cells prolongates the sporophores from its apex. Sometimes, proliferates a hyphae below the sporogenous cells. The sporophores produces, singly at the end of it, the characteristic lunate or obovate ballistospores which are shot away from the sporophores when matured. In some cases, especially in bad condition, the sporogenous cells produce hyphae instead of the sporophore which is terminated with the second sporogenous cells. In many cases, the ballistospores arise from the hyphae which become directly sporo-

phores without making sporogenous cells at their bases. Ballistospores asymmetrical, reniform-lunate and apiculate, (10) 12.0–19.5 (20.0) $\times$ 6.0–10 (11.5) μ , germinate by repetition or produce germ tubes, but not budding as yeast. By single spore culture, visible colony is produced within two days at 20°C. Each ballistospores produce one or more germ tubes and become to mycelial structure, sporophore or directly to sporogenous cell. Chlamydospore-like cells produced in old culture, commonly terminal. Their function is not yet obvious.

On yeast-beef extract agar, growth restricted with numerous production of submerged hyphae, formation of aerial hyphae being slight. In such case, production of sporogenous cells may be observed. No conidia produced.

On Czapek's agar, growth quite poor.

In the experiment of various modified media upon the growth, best result was observed by addition of yeast-extract and, next, of peptone.

Optimum temperature is 20°C; at 30°C, this does not survive in long time, growth being poor and abnormal. So that this members might be not isolated in summer. The passing stage of this species in summer has not been considered here.

Upon the differences between *It. perplexans* and the next species, *It. pyriformis*, Nyland described as follows. "*It. pyriformis* differs from *It. perplexans* Derx in that the chlamydospores have no clamp-connections associated with them and by the presence of abundant aerial mycelium on malt agar, also the ballistospores of *It. pyriformis* are somewhat shorter than those of *It. perplexans*." In compared his original strain and his description with the writer's, it may be clear that the chlamydospore, called by him, is one stage of poorly produced sporogenous cell. When his strain is incubated on malt agar, sporogenous cells are poorly produced without forming clamp-connections at the bases; they will be irregular type of the sporogenous cells. However, when incubated on Gorodokowa's agar or bouillon agar, abundant normal sporogenous cells with clamp-connections were observed. Those sporogenous cells may be taken for chlamydospores when incubated on malt agar. No particular differences are observed between the two species.

Accordingly, *It. pyriformis* may become conspecific with *It. perplexans*.

The strains of *Itersonilia* are not so frequently found on the leaves. Upon further investigations about its life cycle are pursued, taxonomical position of this genus may be settled.

Many thanks are due to Dr. Kominami, and Dr. Kobayasi for many guidances.

Summary

Eight strains of *Itersonilia* were isolated from the leaves of various kinds of plants in Japan. All of these strains were found to be *Itersonilia perplexans*.

Itersonilia pyriformis Nyland seems to be conspecific with *Itersonilia perplexans*.

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- (3) Nyland, G.: Studies of some unusual Heterobasidiomycetes from Washington State. Mycologia. XXXX: 478 (1948)
- (4) Olive L. S.: Studies of the morphology and cytology of *Itersonilia perplexans* Derx. Bull. Torrey Bot. Club. LXXIX: 126 (1952)
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椿 啓 介: ナラタケの木屑繊維素分解力 K. Tubaki: Cellulose-decomposing activity of *Armillariella mellea*

Armillariella mellea が各種樹木の根朽病原菌としてその腐朽力の強い事は一般に知られて居る所であり、是に就て夫々専門的な多くの研究がある。茲にその繊維分解力を他菌と比較した結果を簡単に述べる。使用菌株は *Armillariella mellea* N I. 3001, 使用木屑は針葉樹を撰び杉木屑を陰干にして 200 cc コルベンに 5g 容れ、米糠を 1g, 加へて滅菌し, Buffer (pH=4.5) 2 cc, dist.w. 10 cc を加へて滅菌し, 本菌及び對照として *Trichoderma*, *Cladosporium* を接種, 25°C に 10 日培養後, Buffer (pH=4.5) 50 cc, dist. w. 50 cc, Toruol 1~2 滴を加へて攪拌 40°C に 7 日保ち, Bertlane 法により還元糖を Glucose として定量した。各菌の發育は盛である。分解度は次の計算に依つた。

$$\text{分解度}\% = \frac{\text{還元糖 (g)/100cc} - \text{對照區還元糖 (g)/100cc}}{5} \times 100$$

此の結果(表), 繊維素分解力と還元糖生成度とは必ずしも比例でないと思はれるが, 從來強いとされて居る *Trichoderma*, *Cladosporium* より分解力遙に強いようである。

使用菌株	<i>Armillariella mellea</i>	<i>Tr. kontingi</i>	<i>Tr. lignorum</i>	<i>Cl. herbarum</i>
分解度%	3.16	0.76	0.95	0.60

日本に於ける赤雪と緑雪に就て III*

小林 義雄 福島 博

Yosio KOBAYASI and Hiroshi HUKUSIMA: On the Red and Green Snow in Japan III

本邦に於ける彩雪生物に關しては第 I, II 報に記したが, 昭和27年度も引續き研究を行ひ更に新知見を得たのでここに第III報として報告する。

著者等は27年5月20日より26日に到る迄尾瀬ヶ原(特に下田代周縁部), 富士見峠, アヤマ平, 同龍宮小屋間, 尾瀬沼周縁部及び谷川岳天神峠を, 又福島は6月12日より26日迄八幡平及び八甲田地方を調査し各地で赤雪及び緑雪を採集し 7月28, 29日に燧岳及び會津駒岳で汚雪を採集した。これらの調査に於ては現地では生品の検鏡, 固定をし又チャベツク, ペネツケ, デットマーの寒天培養基等に培養を試みた。

山崎林治氏は本年6月1日長野縣北安曇郡中土村小谷温泉カマ地ブナ林で緑雪を採集し, 小野貞雄氏は6月6日唐松岳, 6月29日白馬大雪溪上部の小雪溪(お花畑)及山頂小屋上の雪溪: 7月19日白馬鎗の雪溪で夫々赤雪を, 8月18, 19日には唐松岳, 白馬鎗にて黄及黒の汚雪を採集し 又黒川道氏は槍ヶ岳にて赤雪を8月11日に採集し著者等に材料を提供された。

これらの材料を送付された黒川道, 小野貞雄, 山崎林治諸氏に感謝する。尙八甲田地方の調査は東北大学附屬高山植物實驗所を本據として行つたもので, この施設使用を許可された神保忠男博士に深謝する。

	Locality	Mark of Locality	Altitude (m)	Date	Colour of "Coloured-Snow"
北 ア ル プ ス 地 方	小 谷 温 泉 附 近	A	ca 1000	1/VI	green
	白馬大雪溪上小雪溪	B	" 2700	29/VI	red
	白 馬 頂 上 雪 溪	C	" 2900	29/VI	red
	鎗 岳 雪 溪	D	" 2500	19/VII	red
	"		" 2700	18/VII	black
	唐 松 岳	E	" 2100~ 2500	6/VI	red
	"		" 2400	18-19/VII	yellow
	槍 岳	F	" 3100	11/VII	red

* 尾瀬原総合學術調査研究の一部

尾瀬地	谷川岳天神峠	G	" 1500	26/V	green brown, and brown
	東電橋附近	H	" 1400	22/V	red brown
	下田代東縁	I	" 1400	22/V	yellow green, red brown, dark green
	富士見峠畫場	J	" 1500	23/V	green, red brown
	アヤマ平附近	K	" 1800	23/V	red
	桧澤道	L	" 1800~ 1500	23/V	green, red brown
	沼尻川邊 (龍宮小屋附近)	M	" 1400	22.24/V 23/V	red brown
	メンゴヤ坂	N	" 1500~ 1700	22.24/V	green, red brown, pink
	白砂濕原	O	1650	24/V	pink
	沼尻平	P	1650	24/V	pink~raspberry red
八方	大八州	Q	" 1650	24/V	green
	ヒウチ岳	R	" 2250	23/Ⅶ	red brown
	會津駒岳	S	" 2100	29/Ⅶ	red brown
	八幡平	T	" 1150~ 1600	15/V	yellow, yellow green, green, dark green, green brown, brown, pink.
八甲田山地方	地獄沼附近	U	" 950	16/Ⅶ	dark green, green brown
	赤石澤附近	V	" 1000	16/Ⅶ	yellow green, dark green
	石倉山附近	W	" 1050	16/Ⅶ	green
	高田谷地	X	" 950	16.22/Ⅶ	brown, pink~raspberry red
	大岳山麓	Y	" 1050	19/Ⅶ	yellow green,
	仙人田附近	Z	" 1300~ 1350	19/Ⅶ	yellow green, green, pink~ raspberry red
地方	植物園内	a	" 950	21/Ⅶ	dark green
	毛無岱	b	" 1000~ 1200	23/Ⅶ	yellow green, green brown

1. *Chionaster nivalis* (Bohl.) Wille Kobayashi et Fukushima in Bot. Mag. Tokyo LXV: 81 fig. 1 (1952).

採集地。北ア: D, F, 谷川: G. 尾瀬: H, I, J, K, N, O, P, S. 八幡平, 八甲田: U, U, W, X, Z, a.

上の如く廣く分布し黄, 黄緑, 緑, 暗緑, 緑褐, 赤褐, ピンク, 血紅色の各色の雪に見られるが個体数は餘り多くない様である。

2. *Selenotila nivalis* Lagerh. K. et F., 1. c. p. 65, 82 fig. 2 (1952).

採集地。尾瀬: H, I, L, N, Q. 八幡平. 八甲田: X, Y.

緑, 緑褐色, 赤褐色, 血紅色の雪に見られたが個体数は極めて少なかった。

3. *Aphanocapsa nivalis* Lagerh. in Nuova Not. V fig.1 (1894); Geitler in Süssw. Fl. XII: 68 (1926); Kol in Folia Cryptog. I: 617 fig. 46 (1928); Geit. in Kryptog. Fl. XIV: 157 (1930).

レイガーは球状、経 $75\sim 105\mu$ で無色又は淡紫色。細胞はゆるく配列し、 $6\sim 7\mu$ で青緑色を呈す (Kol はレイガーの経 40μ 、細胞 $6\sim \mu$ としている)。

Spitzbergen, Hohen-Tatra で見出されているのみの様であるが著者は尾瀬沼尻平附近の赤雪に極めて稀に混じているのを見た。

4. *Achnanthes lanceolata* (Bréb.) Grunow in K. Sv. Vet. Acad. Hand. XVII: 23 (1880); V. Heurck, Syn. Diat. Belg. p.131 P. 1.27 figs. 8-11 (1880-'85); Cleve, Synop. Nav. Diat. II: 191 (1895); Dippel, Dita. Rhein-Mein. p. 23, fig. 40 (1905); Migula, Kryptog. Fl. II (1): 212 p 1.10 fig. 13 (1907); Schonfeld, Diat. Germ. p. 121 pl. 13 fig. 240 (1907); Mayer Bacil.; Regensb. Gew. p.81 (1913); Boyer, Dita. Philad. P. 59 pl. 16 fig. 10-12 (1916); Hustedt in Süssw. Fl. X: 207, fig. 306 a (1930) et Kryptog. Fl. VII (2); 408 figs. 863 a-d (1933) et in Arch. f. Hydrob.

Supp- XV; 202 (1938)-*Achnanthidium lanceolata* Bréb. Meister. Kieselal. Schw. p. 99 pl. 13 figs. 12-13 (1912).

珪殻は楕圓狀被針型で兩端は廣圓狀、中央部は多少膨んで居る、長さ $8\sim 40\mu$ 、巾 $4\sim 10\mu$ 。背線のある軸域は狭い線狀で中心域は四角狀、横條線は丈夫で 10μ 間に $13\sim 16$ 本ありて不明瞭な點狀。背線の無い珪殻は狭い披針型の擬背線を有す、中央部の1側に馬蹄型に光を強く屈曲する部分あり、横條線は丈夫で 10μ 間に $12\sim 17$ 本有す。

各種の水域に廣く分布し本邦にては20餘ヶ所で知られ、今回八幡平の暗緑色雪で見出した。本種は氷雪生物としては初めての記録で以下記す *Diatoma hiemale*, *Hantzschia amphioxys*, *Nitzschia palea*, *Rhiocosphaenia curvata* と共に眞の氷雪生物では無い。

5. *Diatoma hiemale* (Lyngb.) Heib. Consp. Crit. Diat. Den. p. 58 (1863); Van Heurck, l. c. p. 160 p. 1.51 figs. 1-2 (1880-85); Dippel, l. c. p.16 fig.

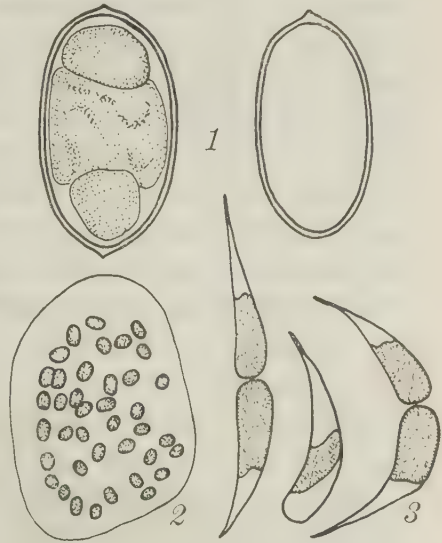


Fig. 25

- 1 *Oocystis lacustris* f. *nivalis*
- 2 *Aphanocapsa nivalis*
- 3 *Raphidonema helveticum*

30 (1905); Migula, 1. c. pl. 13 fig. 5 (1907); Schönfeld, 1. c. p. 98 pl. 5 fig. 30 (1907); Meister, 1. c. p. 63 (1912); Mayer, 1. c. p. 35 Boyer, 1. c. p. 42 pl. 10 figs. 7, 8 (1916); Hustedt, 1. c. p. 129 fig. 115 (1930) et 1. c. p. 102 (1931).

細胞は多数集つてしばしばバンド状のコロニーを形成する。帯面観は四角状、中間帯はやや多くあり。珪殻は線状披針型で両極部は多少突出し廣圓状、長さ $30 \sim 100 \mu$ 、巾 $7 \sim 13 \mu$ 。龍骨は丈夫で 10μ 間に $2 \sim 4$ 本でしばしば不規則、横條線は明瞭で 10μ 間に $18 \sim 20$ 本。擬背線は線状で両端部は狭い。

流水に多く見られる種で本邦でも数ヶ所で見出されているが今回尾瀬龍宮小屋附近の赤褐色の雪で見出したが氷雪生物としては未だ記録が無い様である。

6. *Hantzschia amphioxys* (Ehr.) Grun. V. Heurck, 1. c. 168 pl. 56 figs. 1, 2 (1880-'85); Dippel, 1. c. fig. 291 (1905); Meister, 1. c. p. 203 (1912); Mayer, 1. c. p. 200 (1913); Boyer, 1. c. p. 113 pl. 32 fig. 9 (1916); Schmidt, Atl. Diat. pl. 329 figs. 15-20 (1921); Hustedt, in 1. c. p. 394 fig. 747 (1930) et in 1. c. XV: 461 (1938)-*Nitzschia amphioxys* Ehr. W. Smith, Syn. Brit. Diat. I: 41 pl. 13 fig. 105 (1835); Rabh. fl. Eur. Alg. I: 151 (1884); Migula, 1. c. p. 338 pl. 15 fig. 1 (1907); Schönfeld, 1. c. p. 215 pl. 14 fig. 261 (1907).

細胞の帯面観は四角状で圓くなつた角を有す。珪殻は灣出した腹部と灣入した背部を有す、両端部は強く細くなり多少喙状から頭部状を有す、長さ 100μ 、巾 $5 \sim 10 \mu$ 。龍骨點は 10μ 間に $5 \sim 8$ ケありて中央のものは離れて存す。横條線は點狀を成し 10μ 間に $13 \sim 20$ 本あり。

各種の水域に極めて廣く分布する種で、本邦でも 10 餘ヶ所で見出されているが今回八甲田石倉山附近の緑雪で稀に見出した（死殻は各地の雪に普通に見られた）。氷雪生物としては初めての記録の様である。

7. *Nitzschia palea* (Kütz.) W. Smith. Brit. Diat. II: 89 (1856); Rabh. 1. c. I: 160 (1864); V. Heurck, 1. c. p. 183 pl. 69 figs. 22 b. c (1880-'85); Dippel 1. c. p. 149 fig. 332 (1905); Migula, 1. c. p. 334 pl. 15 fig. 10 (1907); Schönfeld, 1. c. p. 224 pl. 15 fig. 283 (1905); Meister, 1. c. p. 213 pl. 28 fig. 0 (1912); Mayer, 1. c. p. 308 (1913); Boyer, 1. c. p. 122 pl. 32 fig. 15 (1916); Schmidt, 1. c. pl. 349 figs. 1-10 (1924); Hustedt in 1. c. p. 416 fig. 801 (1930) et in 1. c. XV: 481 (1938) et in Binnengew. XVI (2): 475 fig. 567 (1942).

珪殻は線状又は線状披針型で両端部は楔狀に細まるが尖端は喙狀に突出する、長さ $20 \sim 65 \mu$ 、巾 $2.5 \sim 5 \mu$ 。龍骨點は 10μ 間に $10 \sim 15$ 、横條線は纖細で 10μ 間に $35 \sim 40$

本存す。

各種の水域に廣く分布し極めて普通な種で本邦にても 20 餘ヶ所で見出されているが、今回尾瀬アヤマ平附近の赤雪中に稀に混じているのを見た、氷雪生物として初めての記録の様である。

8. *Rhoicosphaenia curvata* (Kütz.) Grunow, V. Heurck, l. c. p. 127 pl. 26 figs. 1-4 (1880-'85); Schmidt, l. c. pl. 213 figs. 1-3 (?); Dippel, l. c. p. 26, fig. 46 (1905); Migula, l. c. pl. 10 fig. 9 (1907); Schönfeld, l. c. 19 3 pl. 13 fig. 230 (1907); Meister, l. c. p. 92 pl. 12 figs. 1-3 (1912); Boyer, l. c. p. 56 pl. 19 f. 25-27 (1916); Hustedt in l. c. 211 fig. 311 (1930); Lefébure, Atl. Diat. pl. 24 fig. 5 (1947). - *Gomphonema curvatum* Kütz. W. Smith, l. c. I: 81 pl. 29 fig. 245 (1853).

帯面觀は彎曲した楔狀。珪殼は棍棒狀で長さ 12~75 μ 、巾 4~8 μ 。彎入殼は背線を有し軸域は狭く中心域はやや廣くなる。横條線は中心域は弱い放射狀で 10 μ 間に約 15 本あり、兩端部は狭い。彎出殼は短い背線を有し狭い線狀の軸域を有す、横條線は 10 μ 間に 12~15 本あり。

流水、汽水域に廣く分布する種で、本邦でも 30 餘ヶ所で見出されているが今回尾瀬龍宮小屋附近の沼尻川邊で赤褐色の汚雪に稀に存するのを見た。氷雪生物として初めての記録の様である。

9. *Chlamydomonas nivalis* (Bauer) Wille, K. et F., l. c. p. 128 fig. 4 (1952).

採集地。北ア： A, B, C, D, E。尾瀬： J, K, N, O, P, R。八幡平。八甲田： W, X, Z。

黄，綠，暗綠，赤褐色の雪にも見出されるが個体數は少く、赤雪には極めて多く、褐色系以外の赤雪（ピンク，血紅色等）の主要構成種である。

10. *Chodatella brevispina* Fritsch in Journ. Linn. Soc. XL: 326 pl. 10 figs. 25, 26, pl. 11 phot. 3, 5 (1912); Brunthaler in Süßw. Fl. V: 139 fig. 136 (1915); Chodat in Bull. Soc. Bot. Genève XIII: 78 figs. 7 (1-3) (1922); Krieger in Ber. d. Deut. Bot. Ges. LVI: 66 pl. 2 fig. 27 (1938); K. et F. l. c. p. 129 figs. 7 T-X (1952).

採集地 尾瀬： N。八幡平。八甲田： V, Y。黄綠，綠，綠褐，褐色の雪で見出したが、綠雪に多く往々この主要種となることがある。

11. *Chodatia tetralloidea* Kol in Bull. Soc. Bot. Genève XXV: 280 288 (1933) et Beih. Bot. Cent. LIII: 37 figs. 64-68 (1935).

細胞は圓筒狀で彎曲し、單一稀に 2 個連絡、尖端部は廣圓狀、稀に截頭狀、長さ 6~7.5 μ 、巾 1~5 μ 。細胞膜は薄く無色。葉綠体は 1 ヶの板狀でプロクロイドを欠く、細胞の

両端部に大きい空胞を有し運動する小体を存す。

本種はスイスの Valsorey, Croix de Tsousse, Jungflaujoch で知られ本邦では尾瀬ダゴ坂の赤褐の雪の中で極めて稀に見出したのみである。

12. *Oocystis lacustris* Chod. forma *nivalis* Fritsch in l. c. XL: 326 pl. 10 figs. 27, 28 (1912); Brunth l. c. V: 125 (1915).

細胞は楕圓形で両端部は廣圓狀又は尖圓狀、長さ $13 \sim 15 \mu$ 、巾 $9 \sim 10 \mu$ (本邦産のものはやや長く、長さ $16.5 \sim 20 \mu$ 、巾 $9 \sim 10.5 \mu$ であつた)。葉緑体は1ヶで細胞の両端部に油脂を有す。

本種は Fritsch によつて南極で見出されたのみの様であるが、本邦に於ては下記の如く極めて廣く分布し、黄、黄緑、緑、暗緑、緑褐、赤褐色、ピンク、血紅色等のすべての色の雪で見出され、特に緑雪の重要な構成種の一つである。

採集地。北ア：A, B。尾瀬：H, I, J, K, L, N, O, S。八幡平。八甲田：U, V, W, X, Y, Z, a, c。

13. *Raphidonema helveticum* Kol in Beih. Bot. Cent. LIII: 38 pl. 2 figs. 1-11 (1935).

本種は単一の細胞で生活し時には2細胞で生活する。細胞は短く、紡錘狀、両端部は急に細くなり刺狀を成す、細胞の長さ $10 \sim 17 \mu$ 、巾 $2 \sim 3 \mu$ 。細胞膜は薄く無色、葉緑体は板狀で裂片狀の縁を有す。ピレノイドは欠く。

本種は Jungflaujoch で Kol によつて見出されたのみの様であるが本邦に於て八甲田石倉山附近の緑雪で稀に見出し得た。

14. *Raphidonema nivale* Lagerh. K. et F. l. c. p. 129 figs. 5, 7 A-D (1952).

尾瀬：I, K, Q。八甲田：W の赤雪及び緑雪で見出したがいずれも個体数は稀であつた。

15. *Scotiella nivalis* (Shutt.) Fritsch. K. et F. l. c. p. 129 figs. 5, 7 K-R (1952).

採集地。北ア：A, B, D。尾瀬：H, I, J, K, L, N, O, P, Q, R, S。八幡平。八甲田：U, W, X, Y, Z。

すべての色の雪に見出されたが、赤褐色、緑褐色等の褐色系統の色雪の主要構成種を成しているが、雪の深い部分や光の射り所のものは褐色の色が弱く緑色になる様である。

16. *Tetradinium* sp.

Chlamydomonas sp. と共に八甲田地方の緑雪の主要構成種の一つであるが種名は未決定である。本種は $14 \sim 16^{\circ}\text{C}$ で30分位、 23°C で2.3分で急激に体が崩壊する特異な真氷雪生物である。

この他種名未決定のものに *Euglena* sp. *Calteria* sp. *Chlamydomonas* sp.

Scotiella sp. *Ulothrix* sp. 等がある。

生 態 的 観 察

赤雪、緑雪の色は67頁の表に示した様にいくつかの區別を成し得る、これはこの中に存在する生物の種類や異物(花粉、礦物破片等)の相異によるものである。

黄〜黄緑雪に見出された生物は *Chionaster nivalis*, *Tetradinium* sp. *Chlamydomonas* spp., *Chodatella brevispina*, *Oocystis lacustris* f. *nivalis*, *Scotiella brevispina*, *Oocystis lacustris* f. *nivalis*, *Scotiella nivalis*, *Navicula* sp. *Ciliata*, *Rotifer*, 珪藻の死殻 (*Cymbella*, *Navicula*) 等で、緑雪に多い藻類の密度の小さな場合や細胞内に包有されている油脂の色による Fritsch-1912- も同様の事を観察している)もので、又唐松岳で見た様に *Alnus*, *Betula* 等の花粉による場合もある。

緑雪に見出されたものは *Chionaster nivalis*, *Selenotila nivalis*, *Tetradinium* sp. *Chlamydomonas* spp. *Chl. nivalis*, *Chodatella brevispina*, *Oocystis lacustris* f. *nivalis*, *Raphidonema nivale*, *R. helveticum*, *Scotiella nivalis*, *Hantzschia amphioxys*, *Amoeba*, *Ciliata*, *Rotifer*, *Pinus* の花粉, 珪藻の死殻でこれらの中最も重要なものは *Chlamydomonas* spp. でこれに次ぐものは *Oocystis lacustris* f. *nivalis* 及び *Tetradinium* sp. で、次は *Scotiella nivalis*, *Chodatella brevispina* であつた。

暗緑色の雪に見られたものは *Chionaster nivalis*, *Tetradinium* sp. *Euglena* sp. *Achnanthes lanceolata*, *Hantzschia amphioxys*, *Chlamydomonas* spp. *Oocystis lacustris* f. *nivalis*, *Scotiella* sp. *Ciliata* 等で緑雪に見られる藻類の密度の大きな時や *Ciliata* が旺盛に繁殖した場合往々この色を呈する様で、又異物による例もある。

緑褐色〜褐色の雪で見出したものは *Chionaster nivalis*, *Selenotila nivalis*, *Chlamydomonas* spp. *Chl. nivalis*, *Chodatella brevispina*, *Oocystis lacustris* f. *nivalis*, *Scotiella nivalis*, 珪藻の死殻等で褐色系の色の原因は *Scotiella nivalis* の細胞内の油脂の色によるものであるか、又礦物破片や *Chlamydomonas nivalis* による事もある。

赤褐色の雪には *Chionaster nivalis*, *Selenotila nivalis*, *Oscillatoria* sp. *Euglena* sp. *Diatoma hiemale*, *Rhoicosphaenia curvata*, *Chlamydomonas* spp. *chl. nivalis*, *Chodatella tetrallantoidea*, *Oocystis lacustris* f. *nivalis*, *Raphidonema nivalis*, *Scotiella nivalis*, *Ulothrix* sp. *Ciliata*, *Rotifer*, トビムシ, 珪藻の死殻が見られ、*Scotiella nivalis* が最も重要な種類で雪の色はこの細胞内の油脂による例が多いが又 *Chlamydomonas nivalis* や礦物破片による事もある。この様に *Scotiella* による赤雪の例は Chodat (1922) が Combe de Morts で *Scot. cryophyla* によるのを、又最近 Siemenska (1951) は Tatra で *Scot. nivalis* 及び *Chl. nivalis*

によるのを報じているのみの様である。

ピンク～血紅色の雪で見出されたものは *Chionaster nivalis*, *Selenotila nivalis*, *Aphanocapsa nivalis*, *Chlamydomonas* spp. *Chl. nivalis*, *Oocystis lacustris* f. *nivalis*, *Scotiella nivalis*, *Ulothrix* sp. *Nitzschia palea*, *Ancylonema* sp. 等で *Chlamydomonas nivalis*, *Ancylonema* sp. が最重要種である。

赤雪は強い太陽光の當る所に見られ、緑雪は光の弱い所に見られると言はれていた (kol. 1933) が著者等も今回 *Chlamydomonas nivalis* を主とする典型的な赤雪 (ピンク～血紅色) はすべて光をさえぎるもののない空地に見られ、*Scotiella nivalis* を主とする褐色系の赤雪 (緑褐～赤褐) はこれより光の弱い所、例へば闊葉樹林の中や、やや暗い谷間の雪に見られ、緑雪はもつと暗い所に見出した。

尙 *Scotiella nivalis* による赤褐色の雪の深部は緑色を呈す場合のある事を尾瀬で観察したが、これはこの藻に有害な強烈な光線が當る時細胞の中時に油脂に赤褐色の色素が蓄積されるが深部の光の弱い所ではこの様な事が少い爲であらう。

Summary

1. Additional localities to the coloured snow were repoted from the midde and northern parts of Honshû, Japan (cf. Table 1).

2. The cryophytic species determined are as follows. Fungi: *Chionaster nivalis*, *Selenotila nivalis*. Algas: *Aphanocapsa nivalis*, *Achnanthes lanceolata*, *Diatoma hiemale*, *Hantzschia amphioxys*, *Nitzschia palea*, *Rhicosphaenia curvata*, *Chlamydomonas nivalis*, *Chodatella brevispina*, *Chodatia tatrallantoidea*, *Oocystis lacustris* f. *nivalis*, *Raphidonema helveticum*, *R. nivale*, *Scotiella nivalis*.

3. In the field, we could distinguish several hues of colours as yellow, yellow green, green, dark green, green brown, red brown, pink, raspberry red.

4. *Tetradinium* sp. *Carteria* sp. *Chlamydomonas* spp. *Chodatella brevispina*, *Oocystis lacustris* f. *nivalis*, *Scotiella nivalis* were found to colour snow yellow, yellow green, or dark green; *Chlamydomonas* spp. *Chl. nivalis*, *Oocy. lacustris* f. *nivalis*, *Scot. nivalis*. especially *Scot. nivalis* green brown, brown or red brown; *Chl. nivalis* and *Ancylonema* sp. pink or red.

5. Typical red snow coloured by *Chl. nivalis* seems to be frequently found in such a place exposed to sunshine as mountain ridges, snow valleys or open areas of forests. Jn somewhat darker places of snow

valleys or open areas of forests composed of deciduous broad-leaved trees were found for the first time red snow patches coloured by *Scot. nivalis*, which turns its colour green in the dark places of conifer-forests or in the depth of snow field.

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On the Genus *Inocybe* from Japan

By

Yosio KOBAYASI

小林 義雄：日本産アセタケ屬に就て*

In Japan, the genus *Inocybe* has been known to include many poisonous species with the representative *In. rimosa* (Japanese name "Asetake"), which is, in fact, not so commonly found. In spite of the common occurrence of many species, only few as *In. rimosa*, *In. geophylla*, *In. lacera*, *In. umbratica*, *In. praetervisa* and *In. plumosa* have been known in Japanese territory. Since 1948, the writer has been collected many specimens from more than one hundred different localities of alpine regions as well as lowlands, with the result that he could identify 38 species, 1 variety and 2 forms.

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Abbreviations

Quél. C.J.V.:	Quélet, Champ. Jura Vosg. I in Mém. Soc. D'Emul, Montb. 2 sér. V (1872)
Quél. E. F.:	Quélet, Enchiridion Fungorum (1886)
Sacc. S. F.:	Saccardo, Sylloge Fungorum
Sacc. F. I. C.:	Saccardo, Flora Italica Cryptogama, Hymeniales II (1916)
Mass. Monogr.:	Massee, Monogr. genus <i>Inocybe</i> (1904)
Rea, B. B.:	Rea, British Basidiomycetae (1922)
Kauffm. N. A. F.:	Kauffmann, North American Flora X (1924)
Bres. I. M.:	Bresadola, Iconographia Mycologicae XV-XVI (1930)
Heim, In.:	Heim, Le genre <i>Inocybe</i> (1931)
Imai, S. A. H.:	Imai, Studies on the Agaricaceae of Hokkaido II (1938)
Lange, F. A. D.:	Lange, Flora Agaricina Danica IV (1938)
K. et M., I. S. F.:	Konrad et Maublanc, Icones Selectae Fungorum I-II
Cke, I. B. F.:	Cooke. Illustrations of British Fungi (1886)

* 文部省科學研究費による研究

Pl-cyst :	Pleurocystidia	Ch-cyst :	Cheilocystidia
Pil-cyst :	Pileocystidia	Caul-cyst :	Caulocystidia
Sp + :	Spores spiny, with cystidia		
An + :	Spores angular or verrucose, with cystidia		
Sm + :	Spores smooth, with cystidia		
Sm - :	Spores smooth, without cystidia		
Senkawa :	Tumura Medical Botanic Garden at Senkawa, Tokyo		
Asakawa :	Experimental Botanic Garden of the Government Forest Experiment Station at Asakawa, Tokyo		
Titibu :	Mt. Bukoo and neighbouring regions of Titibu-City, Saitama Pref.		

Key to the species

- 1 { Spores smooth (Subg. Eu-Inocybe Lange) 2
- 1 { Spores polyhedral or verrucose or spiny (Subg. Clypeus (Karst.) Lange) 3
- 2 { With thick-walled and crested cystidia Sec. Muriculata Lange
- 2 { With thin-walled and uncrested paracystidia on gill-edge Sec. Depauperata Lange
- 3 { With polyhedral or verrucose spores Sec. Astrosporina (Schroet.) Lange
- 3 { With spiny spores Sec. Calospora Lange

Sec. Muriculata

- 1 { Pileus Squarrose Subsect. Squarrosae 2
- 1 { Pileus fibrillose Subsect. Fibrillosae 8
- 2 { Spores sphaerical (Ser. Sphaerosporae Y.K.) 1. *I. sphaerospora* 3
- 2 { Spores not sphaerical 3
- 3 { Spores long, cylindrical (Ser. Longisporae Lange) 2. *I. lacera* 4
- 3 { Spores ovoid or ellipsoid (Ser. Ovisporae Lange) 4
- 4 { Spores very small, 5-6 × 3-4 μ . Pileus small (5-17 mm), pale ochraceous. Stipe with bulbous base. Pl-cyst thick-walled 3. *I. neomi.rospra* 5
- 4 { Spores large, more than 7 μ long 5
- 5 { Pileus pale ochraceous, 3-4 cm. Stipe equal with mycelial base. Pl-cyst thick-walled 10. *I. rimosa* f. *squarrosa* 6
- 5 { Pileus not ochraceous 6
- 6 { Pileus purplish gray-brown, 1-1.5 cm. Stipe slightly bulbous at base. Pl-cyst thin-walled 4. *I. cinninata* 7
- 6 { Pileus not gray-brown 7
- 7 { Pileus white, 1.5-2.5 cm. Stipe equal. Pl-cyst thick-walled 7. *I. lilacina* f. *squarrosa* 7
- 7 { Pileus olivaceous purplish, then purplish-ochraceous, 2-2.5 cm. Stipe equal. Pl-cyst thick-walled 5. *I. ozensis* 7
- 8 { Pileus with flocculose marginal veil, yellowish brown, 2 cm. Stipe equal, mycelioid at base. Pl-cyst thin or thick-walled 6. *I. neoflocculosa* 9
- 8 { Pileus without veil 9

- 9 { Pileus white, 1-1.8 cm. Stipe equal. Pl-cyst thick-walled 7. *I. geophylla*
 Pileus not white 10
- 10 { Pileus purplish 1-2 cm. Stipe equal or broader at base. Pl-cyst thin-walled ...
 8. *I. lilacina*
 Pileus ochraceous or brown 11
- 11 { Pileus dingy yellow or ochraceous, fibrillose, not rimose, but minutely
 squamulose, 1.5-2.5 cm. Stipe bulbous at base. Pl-cyst thin-walled
9. *I. lucifuga*
 Pileus rimose. Pl-cyst thick-walled 12
- 12 { Pileus ochraceous, faintly rimose, 2-4 cm. Stipe with subbulbous base. Spores
 $8-10 \times 5-5.5 \mu$ 10. *I. rimosa*
 Pileus dark brown, 2-2.5 cm. Stipe with bulbous base. Spores small,
 $6-7.5 \times 4-4.5 \mu$ 11. *I. microspora*

Sec. Depauperata

- 1 { Pileus squarrose (Subsec. Squarrosae) 12. *I. mutata*
 Pileus fibrillose (Subsec. Fibrillosae) 2
- 2 { Pileus yellowish ochraceous 3
 Pileus brown-grayish 4
- 3 { Pileus large, 2.5-4 cm, conspicuously rimose. Base of stipe not bullate.....
13. *I. fastigiata*
 Pileus small, 1.5-3 cm, not distinctly rimose. Base of stipe bullate.....
 14. *I. Cookei*
- 4 { Pileus pale grayish ochraceous (avellaneous), 1.5-2.5 cm, odour nauseous. Stipe
 thickened at base 15. *I. avellanea*
 Colour of pileus not as above 5
- 5 { Pileus purplish brown, canescently maculated, 1.8-4 cm. Stipe equal
16. *I. maculata*
 Colour of pileus not as above 6
- 6 { Pileus bright brown, 3-4 cm. Stipe equal, bright orange-brown
17. *I. aureostipes*
 Pileus grayish brown..... 7
- 7 { Pileus grayish brown or pale brown, 2.5-6 cm, radially striated, later
 rimose. Stipe almost white, truncate or bulbous at base
18. *I. umbrinella*
 Pileus grayish brown, toward margin fading to olivaceous-ochraceous or
 whitish.....18. *I. umbrinella* f. *pallidula*

Sec. Astrosporina

- 1 { Pileus scaly or lanuginose (Subsec. Non-fibrillosae)..... 2
 Pileus fibrillose (Subsec. Fibrillosae) 5
- 2 { Growing in alpine region 3
 Growing in lowland 4

- 3 { Pileus small, 5-11 mm, dark brown, densely covered with cinereous lanuginose hairs, with fimbriate margin. Stipe very short, bullate at base. Pl-cyst thick-walled. Growing on ground.....19. *I. montana*
 Pileus medium-sized, 1.8-2.3 cm, dark brown with purplish tint, with dense and recurved scales. Stipe incrassate at base. Pl-cyst thin-walled. Growing on decaying trunks 20. *I. plumosa*
- 4 { Pileus grayish brown, 16-30 mm, with fine patent scales, frequently areolated. Stipe thick, 2-3 (-5) mm thick. Pl-cyst thick-walled.....21. *I. lanuginella*
 Pileus castaneous brown or violaceous brown, 10-20 mm, with fine, recurved cinereous scales, not areolated. Stipe slender 1-1.8 mm thick. Pl-cyst thick-walled.....22. *I. squamulosa*
- 5 { Spores very small, polyhedral, without nodules. Pileus orange brown, 7-20 mm. Stipe subbullate. Pl-cyst thick-walled 23. *I. polycystidiata*
 Spores with nodules 6
- 6 { Nodules of spores low and obtuse 7
 Nodules of spores obconic, conspicuous 18
- 7 { Pileus white, 2-3.5 cm. Stipe with bulbous base. Pl-cyst thick-walled
 24. *I. umbratica*
 Pileus not white 8
- 8 { Pileus yellowish 9
 Pileus ochraceous to brown 10
- 9 { Pileus orange-yellow, not viscid, 1.5-4 cm. Stipe with bulbous base, hollow. Pl-cyst thick-walled 25. *I. lutea*
 Pileus stramineous, viscid, 1.5-2.5 cm broad. Stipe equal, solid. Pl-cyst thick-walled 26. *I. trechispora*
- 10 { Pileus large 3-6 cm 11
 Pileus smaller than 2.5 cm..... 12
- 11 { Pileus grayish brown, when matured coerulescens in the middle part. Stipe bulbous at base. Pl-cyst thick-walled 27. *I. coerulescens*
 Pileus yellow-ocher or ochraceous. Stipe with emarginate bulb. Pl-cyst thick-walled 28. *I. praetervisa*
- 12 { Pileus small, about 1 cm broad..... 13
 Pileus medium-sized 14
- 13 { Pileus purplish brown, 8-12 mm. Stipe equal, pale ochraceous. Pl-cyst thin-walled 29. *I. neoumbrina*
 Pileus pale yellow or almost white 8-17 mm. Stipe with incrassate base, cream-coloured. Pl-cyst very thick-walled 30. *I. senkawaensis*
- 14 { Pileus ochraceous 15
 Pileus brown or darker 16
- 15 { Pileus ochraceous or fuscescens. Stipe equal, pale yellow, with pinkish tint. Pl-cyst thick-walled 31. *I. putilla*
 Pileus ochraceous, at umbo brownish gray. Stipe with bulbous base, pale ochraceous or almost white. Pl-cyst thick-walled 32. *I. inaensis*
- 16 { Pl-cyst thin-walled. Pileus chestnut-brown or dark brown, rimose. Stipe with bulbous base.....33. *I. umbrina*
 Pl-cyst thick-walled 17

- 17 { Pileus grayish brown. Stipe with emarginate bulb, pale orange-pinkish.
 Pl-cyst large 34. *I. titibuensis*
- 17 { Pileus dark purplish, then dark grayish. Stipe bullate at base, pale purplish-gray. Pl-cyst small, 40-50 μ long 35. *I. nikkoensis*
- 18 { Pileus large 4.5-6.5 cm, dark brown. Stipe with bulbillate base, white or pale ochraceous. Pl-cyst thick-walled 36. *I. asterospora*
- 18 { Pileus medium-sized, 1.5-2 cm, glaucous brown. Stipe with bulbous base, glaucous brown. Pl-cyst thin-walled 37. *I. nodulospora*

Sec. Calospora

- Only one species 38. *I. calospora* f. *minor*

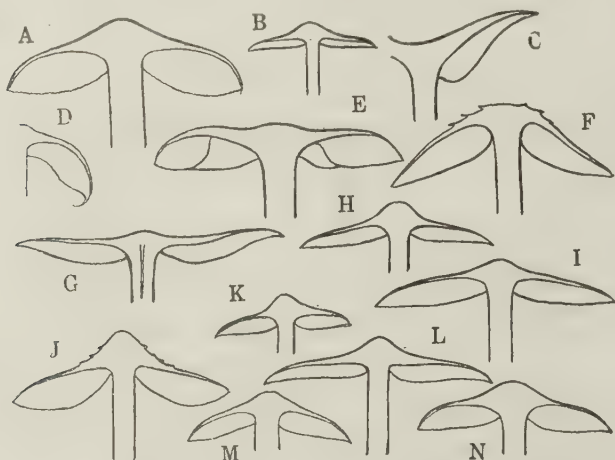


Fig. 26. Sections of pilei in diagram

- | | |
|---|---------------------------|
| A. <i>I. lacera</i> | H. <i>I. Cookei</i> |
| B. <i>I. neomicrospora</i> | I. <i>I. maculata</i> |
| C. <i>I. ozeensis</i> | J. <i>I. squamulosa</i> |
| D. <i>I. neoflocculosa</i> | K. <i>I. neoumbrina</i> |
| E. <i>I. rimosa</i> | L. <i>I. senkawaensis</i> |
| F. <i>I. rimosa</i> f. <i>squarrosa</i> | M. <i>I. putilla</i> |
| G. <i>I. fastigia</i> | N. <i>I. calospora</i> |

1. *Inocybe sphaerospora* Y. Kobayasi sp. nov.

Pileus convexo-expansus vel umbonatus, 1-5.5 cm latus, margine radiatim rimosus et plicatus, sericeus, pallide ochraceus; lamellae adnexae, ventricosae, primo citrinae deinde fusciscentes. Stipes crassus equalis solidus fibrosus, pileo concolorus, 4 cm longus 7-9 mm crassus. Pl-cyst et Ch-cyst numerosa, ventricoso fusiformia, plus minusve crassiparietalia lutescentia 80-85 $\times$ 12-13 μ . Basidia 4-sterigmata, 35-37 $\times$ 8 μ . Sporae sphaeroideae laeves ochraceae granulosa 6-6.5 μ in diam.

(Sm+) No. 34. Pileus convex-expanded or umbonate, 1-5.5 cm broad, the margin radially rimose and folded; surface very silky and glossy, pale ochraceous (Maize-Yellow—Mars Yellow), context thin, fleshy, pale citron yellow; lamellae adnexed, broad ventricose, at first citron yellow, then dark brown (Old gold). Stipe thick, equal, solid, fibrous, surface concolorous with pileus, 4 cm long, 7-9 mm thick. Pl-cyst abundant, ventricose fusiform, slightly thick-walled, yellowish, $80-85 \times 12-13 \mu$. Ch-cyst same with Pl-cyst, fasciculate. Basidia 4-sterigmate, $35-37 \times 8 \mu$. Spores spherical, smooth, ochre-coloured, with granulous context, $6-6.5 \mu$ in diameter.

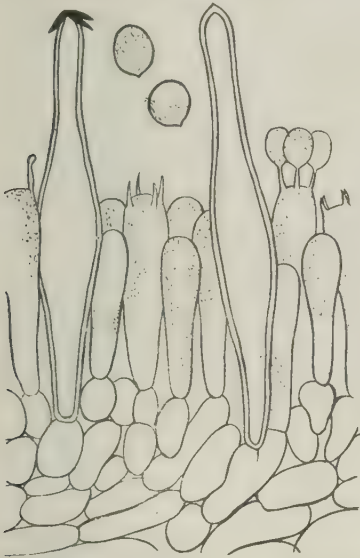


Fig. 27. *I. sphaerospora* A, part of hymenium showing pleurocystidia and spores

Nom. Jap. Tama-asetake (nov.)

Hab. On the ground in woods, Zindaizi, Musasi (Sept. 8, 1930).

The present species is distinct from any other members of this genus in having spherical and smooth spores.

2. *Inocybe lacera* (Fr.) Quél.

C.J.V. p. 180; Sacc. F.I.C. p. 711; Rea, B.B. p. 200; Kauffm. N.A.F. p. 246; Bres. I.M.XV p. 731; Heim, In. p. 239 fig. 157-158 pl. 19 f. 1-4; Imai, St. Agar. Hokkaido II: 221 (1938). Syn. *Agaricus* (*Inocybe*) *lacerus* Fr. Syst. Myc. I: 257 (1821); Cke., I.B.F. pl. 583. *Agaricus* (*Hebeloma*) *lacerus* Fr. Epier. Myc. p. 173 (1838); Cke., Handb. Brit. Fung. I: 115 (1871).

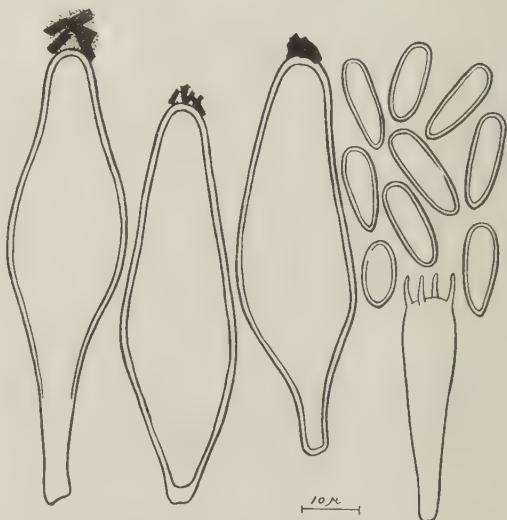
(Sm+) No. 50. Pileus hemispherical when young, then expanded-campanulate, umbonate, 1-2.2 cm broad; surface dark brown, dry, not silky, tomentose by fine dark brown reflexed scales, margin fimbriate, at first connected with stipe by pale grayish arachnoid veil; lamellae adnexed, close, brown. Stipe incrassate upwards or almost equal, stuffed or somewhat hollow, firm, tough, with equal or slightly incrassate base; surface concolorous with pileus, scaly 2-3.5 cm long, 2-3 mm thick. Pl-cyst scattered, rhombic or turbinate with pedicel, apex rounded, hyaline, moderately thin-walled, with apical ochraceous

Fig. 28. *I. lacera* ca. $\times 1$

crystals, $50-60 \times 15-17 \mu$; ch-cyst numerous with clavate sterile cells, fasciculate. Basidia 4-sterigmate, $30-35 \times 8-10 \mu$. Spores cylindrical, phaseoliform or slightly narrowed toward base, pale ochraceous, smooth, $10-15 \times 4.5-5.5 \mu$.

Nom. Jap. Kuro-tomayatake

Hab. On the wayside ground, Togura, Gumma Pref. (Oct. 5, 1950); Ikaho (Oct. 3, 1951); Minami-saku, Sinano (D. Simizu, Oct. 1950).

Fig. 29. *I. lacera* Fleurocystidia, basidium and spores

3. *Inocybe neomicrospora* Y. Kobayasi sp. nov.

Pileus pusillus planus vel paulo umbonatus, margine rectus vel reflexus 5-17 cm latus, pallide ochraceus, squamulosus, squamulis umbrinis confertioris versus umbonem;

lamellae adnexae vel adnatae confertae, angustae, cinereo-umbrinae, aciebus serrulatis, albis. Stipes aequalis, basi bulbosus solidus, glaber, candidus, plus minusve farinaceus, 1.5-3 cm longus, 1.5-3 mm latus. Pl-cyst sparsa, ventricosa apice truncata crasiparietalia hyalina, $40-50 \times 15-20 \mu$. Cellulae steriles acierum vesiculosae, tenuiparietales, hyalinae. Basidia 4-steigmata $15-17 \times 3.5-4 \mu$. Sporae minutissimae, ovoideae laeves $5-6 \times 3-4 \mu$.

(Sm+) No. 44. Pileus small, expanded, almost plane or somewhat umbonate, margin straight or reflexed, 5-17 mm broad; surface minutely scaly, denser at the umbo, dry, not glossy, pale ochraceous, scales somewhat brown; context rather firm, whitish; lamellae adnexed or adnate, very narrow, close, grayish brown, edges finely serrulate, whitish. Stipe almost equal except for the bulbous base, solid, glabrous, silky white or somewhat farinaceous, 1.5-3 cm long, 1.5-3 mm thick. Trama composed of septate hyphae. Pl-cyst scattered, peculiar in form, fusiform with truncate ends, thick-walled, hyaline, $40-50 \times 15-20 \mu$, sterile cells of edges vesiculose, thin-walled, hyaline, rarely mingled with ch-cyst. Basidia 4-sterigmate, very short, $15-17 \times 3.5-4 \mu$. Spores very small, ovoid, smooth, $5-6 \times 3-4 \mu$.

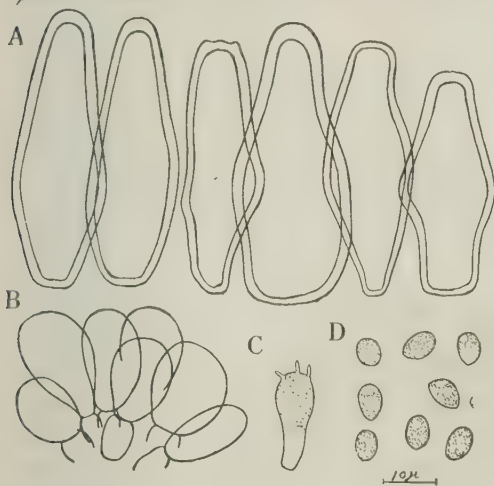


Fig. 30. *I. neomicrospora* Pleurocystidia (A), a part of gill-edge (B), basidium (C) and spores (D)

Hab. Senkawa (Aug. 16, 1950)

This species is distinct in having minute spores, scaly surface of pileus and peculiar form of cystidia.

4. *Inocybe cincinnata* (Fr.) Quél.

C.J.V. p. 179 pl. 12 fig. 4; Sacc. F.I.C. p. 707; Massee, Monogr. gen. *Inocybe* p. 489 (1904); Rea. B.B. p. 203; Kauffm. N.A.F. p. 243; K. et M.I.S.F. pl. 97 (1929); Heim, In. p. 269 fig. 171 pl. 22 fig. 3, 6; Lange, F.A.D. p. 72 pl. 111 H. Syn. *Agaricus cincinnatus* Fr. Syst. Myc. I: 256 (1821); Pat. Tab. Anal. VI: 19 no 541 (1887). *Agaricus alienellus* Britzelm. Dermini u. Melanosp. Südbayern p. 154 (1883).

Inocybe alienella Sacc. Syll. Fung. V : 764 (1887).

(Sm+) No. 57. Pileus conic or convex, obtuse, somewhat firm, 1-1.5 cm broad, with straight or incurved margin; surface dry, purplish gray-brown, densely covered with purplish brown squarrose scales, especially distinct on the disk, margin with the matted appressed fibrils, occasionally rimose, context whitish or pale purplish; lamellae moderately crowded, sinuate-adnexed, broad, edges fimbriate, at first pale purplish gray, then darker. Stipe firm, slightly bulbous at base, attenuated upwards, stuffed or with narrow lumen, surface fibrillose-subscaly, pale purplish, 2.5-3.5 cm long, 1.8-3 mm thick. Pl-cyst abundant, sublanceolate or fusoid, with obtuse or spherical apex, rather thin-walled, $50-70 \times 8.5-13 \mu$, with granulous contents; ch-cystidia same form with pl-cyst, not so fasciculate. Basidia 4-sterigmate, $25 \times 5-6 \mu$. Spores smooth, subovoid or fusoid, inaequilateral, $7-10 \times 3.7-5 \mu$, pale brown, granulous.

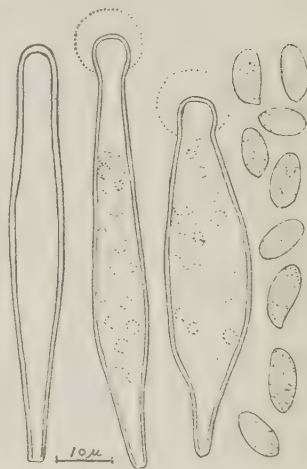


Fig. 31. *I. cinnamomea*
Pleurocystidia and spores

Nom. Jap. Kurotomayatake-modoki (Imazeki in sched.)

Hab. Nagaone, Titibu (D. Simizu, Oct. 13, 1950).

This species is characterized by the squarrose scaly pileus and purplish tint of stipe. The fungus which was collected in Iioka, Tiba Prefecture by Imazeki was referred to this species by him, but seems to be somewhat aberrant form in having very long cystidia.

5. *Inocybe ozeensis* Y. Kobayasi sp. nov.

Pileus mediocris, fere planus vel paulo concavus, non umbonatus, margine lobatus 2-2.5 cm latus, squarrosus, centraliter areolato-squarrosus, squamulis reflexis, margine paulo rimosus, olivaceo-purpureus, maturitate purpureo-ochraceus; lamellae adnexae, ventricosae, latae, subremotae, cinereo-umbrinae, aciebus fere integris farinaceis. Stipes aequalis, basi non bulbosus, solidus, sericeus, pallide purpureus, 3-3.5 cm longus, 4 mm crassus. Pl-cyst sparsa, ch-cyst gregaria ventricosae-clavata breviter pedicellata, apice frequenter capitata, hyalina, crassiusculi-farietalia $40-50 \times 12-14 \mu$. Basidia 2 vel 4-sterigmata $19-22 \times 5-6 \mu$. Sporae ovoideae inaequilateralis basi acuta, laevia $7.5-9 \times 5 \mu$.

(Sm+) No. 51. Pileus medium-sized, expanded almost plane or somewhat concave, not umbonate, margin lobed or split, 2-2.5 cm

Fig. 32. *I. ozeensis*

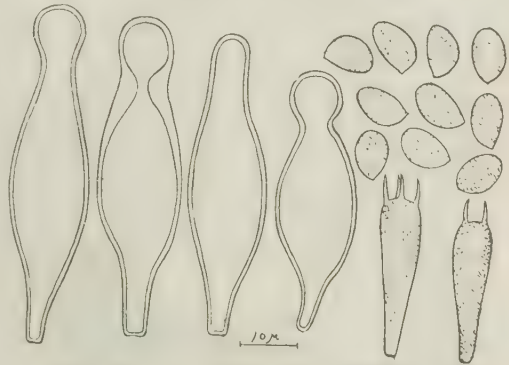
pale purplish, 3–3.5 cm long, 4 mm thick. Trama composed of hyphal tissue. Pl-cyst scattered, ch-cyst gregarious, clavate, ventricose, with short pedicel, mostly capitate, hyaline, slightly thick-walled, $40\text{--}50 \times 12\text{--}14 \mu$. Basidia 2 or 4-sterigmate, $19\text{--}22 \times 5\text{--}6 \mu$. Spores ovoid, inaequilateral, acute at the base, smooth, $7.5\text{--}9 \times 5 \mu$.

Hab. Ozegahara Moor (Oct. 2, 1950)

This belongs to the *I. obscura* group sensu Heim, and also has some resemblances to *I. cinnamata* and *I. violaceoalbipes* of North America.

6. *Inocybe neoflocculosa* Y. Kobayasi sp. nov.

Pileus convexus dilatato-umbonatus 2 cm latus, pallide ochraceus conspicue fibrilloso-tomentosus, margine involutus subrimosus, velis marginalibus floccosis; lamellae adnatae, subremotae, latae pallide ochraceae, aciebus albis farinaceis. Stipes aequalis solidus flexuosus, 5 cm longus 4.5–5 mm crassus, pallide ochraceus floccosus, sursum albidus, fere glabrus, basi mycelioidus, non bulbosus. Pl-cyst abundantia, elongata, tenui-vel crassiparietalia, $85\text{--}100 \times 14\text{--}16 \mu$, fusiformia, hyalina. Ch-cyst sparsa. Cellulae marginales confertae, clavatae vel vesiculosae, tenuiparietales hyalinae, $15\text{--}50 \times 7\text{--}12 \mu$. Basidia 2 vel 4-sterigmata, $30\text{--}37 \times 7\text{--}8.5 \mu$. Sporae citrifformes, fuligineae, laeves $6\text{--}8 \times 4.5\text{--}5 \mu$.

Fig. 33. *I. ozeensis* Pleurocystidia, basidia and spores

(Sm+) No. 89. Pileus convex, broadly umbonate with involute margin, 2 cm. broad, surface pale yellowish brown, distinctly fibrillose-

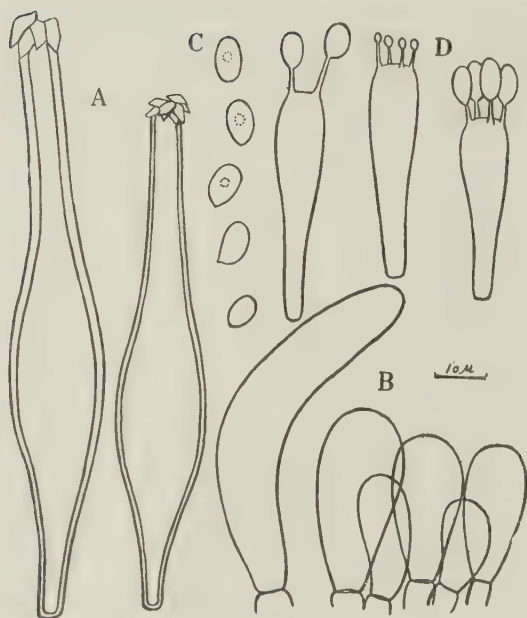


Fig. 34. *I. neoflocculosa* Pleurocystidia (A), sterile cells on gill-edge (B), spores (C) and two types of basidia (D)

walled, hyaline, $15-50 \times 7-12 \mu$. Basidia 2 or 4-sterigmate, $30-37 \times 7-8.5 \mu$. Spores citriform, brown, smooth, $6-8 \times 4.5-5 \mu$.

Hab. Under the *Larix*-woods, Mitutôge, Yamanasi Pref. (Sept. 9, 1951)

The European and North American *I. flocculosa* Berk. seems closely allied to this new species, but differs in having the mouse brown pileus and short pl-cyst ($45-70 \mu$ long by Heim) from the latter.

7. *Inocybe geophylla* (Fr. ex Sowerb.) Quél.

C.J.V. p. 182 et E.F. p. 97; Sacc. S.F. V: 784 (1887) et F.I.C. p. 727; Rea, B.B. p. 196; Kauffm. N.A.F. p. 252; Bres. I.M. XVI: pl. 752; Heim, In. p. 139 f. 110 pl. 1 f. 1-2; Imai, S.A.H. p. 220; Lange F.A.D. p. 75 (forma *typica*); Hongo, in Journ. Jap. Bot. XXVI: 24 (1951). Syn. *Agaricus geophyllus* Sow. Engl. Fung. II pl. 124 (1799). *Agaricus* (*Inocybe*) *geophyllus* Fr. S.M. I: 258 (1821); Cke., I.B.F. pl. 401 (1886).

(Sm+) No. 11, 59. Pileus 1-1.8 cm broad, expanded-umbonate;

tomentose, margin sub-rimose with floccose marginal veil, context firm, whitish; lamellae adnate with striation on stipe, subdistant, broad, pale ochraceous, edges white, farinaceous. Stipe equal, thick, solid, flexuous, 5 cm long, 4.5-5 mm thick, pale yellowish brown, floccose, upper part whitish, almost smooth, basal part not bulbous, mycelioid. Trama composed of long septate hyphae, not pseudoparenchymatous. Pl-cyst copious, thin or thick-walled, very long, $85-100 \times 14-16 \mu$, fusiform, hyaline. Ch-cyst scattered; marginal cells crowded, clavate or vesicular, thin-

surface dry, silky-white or pale yellowish-gray at the center, somewhat glossy, radiately fibrillose, not squarrose, finely serrate at the margin; lamellae adnexed, subdistant, grayish-clay coloured. Smell none. Stipe slender, equal, 2-6 cm long, 2-3 mm thick, stuffed or somewhat hollow, silky-white, externally floccose, pruinose at the apex. Basidia 2 or 4-sterigmate, $20-22 \times 5-6 \mu$. Spores subovoid, inaequilateral, $7-8 \times 5 \mu$, pale brown, smooth, granulous. Pl-cyst abundant, ventricose, moderately thick-walled, $50-60 \times 16-18 \mu$. Ch-cyst bladdery, fasciculate, hyaline, thin or moderately thick-walled.

Nom. Jap. Siro-tomayatake

Hab. Asakawa (Sept. 30, 1949); Nagaone, Titibu (Simizu Oct. 14, 1950); Mt. Haruna (Oct. 2, 1951).

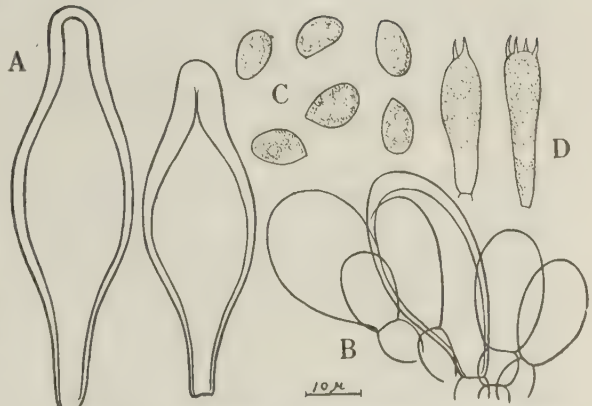


Fig. 35. *I. geophylla* Pleurocystidia (A), sterile cells on gill-edge (B), spores (C) and basidia (D)

7'. *Inocybe geophylla* (Fr.) Quél. forma squamosa Y. Kobayasi forma nov. A typo differt pileo squamoso.

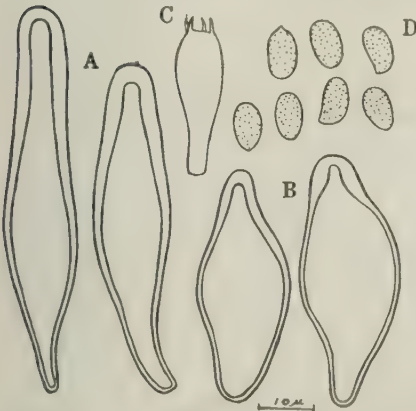


Fig. 36. *I. geophylla* f. *squamosa* Pleurocystidia (A), cheilocystidia (B), basidium (C) and spores (D)

(Sm+) No. 67. Pileus conic, 1.5-2.5 cm broad; surface dry, white, with pale ochraceous central part, umbo with white and crowded squamules; lamellae adnate, ventricose, close at first, pale grayish, then grayish-brown, edges almost entire. Stipe equal, irregularly hollow, white fibrillose, 3-4 cm long, 2.5-4 mm thick. Trama composed of thick, septate hyphae, seemingly pseudoparenchymatous. Pl-cyst ventricose, rather thick-walled, especially

thicker in the apical part, crowded, $50-64 \times 12-15 \mu$; ch-cyst fasciculate, shorter than pl-cyst, $30-42 \times 12-16 \mu$. Basidia 4-sterigmate, $25 \times 7-7.5 \mu$. Spores obliquely ovoid, smooth, $7-7.8 \times 4-4.5 \mu$.

Nom. Jap. Sasakure-sirotomayatake (nov.)

Hab. Takinoiri-yama, Titibu (Simizu, Nov. 2, 1950).

8. *Inocybe lilacina* (Boud.) Kauffmann

Agar. Mich. p. 466 (1918) et N.A.F. p. 250. Syn. *Inocybe geophylla* var. *lilacina* Boud. Ic. Myc. I: 13 (1905); Bres. I.M. pl. 752 pro parte; Heim, In. p. 141 pl. 2 fig. 1, 2; Lange, F.A.D. p. 76.

(Sm+) No. 68. Pileus campanulate to convexed-expanded, umbonate, fleshy, 1-2 cm broad; surface radiately striate or folded, somewhat repand at the margin, pale purplish on the center; orange-ochraceous; lamellae adnate, unequal, close to subdistant, at first cinereous, then grayish brown, edges white-fimbriate. Stipe equal or broader at the base, stuffed or obscurely hollow, 2-3.5 cm long, 1.5-3 mm thick, concolorous with pileus, but paler, fibrillose. Trama composed of fine hyphae. Basidia 4-sterigmate, $18-21 \times 7-8 \mu$. Spores obliquely ellipsoid or ovoid, $8-9 \times 4.4-5 \mu$, smooth, brown. Pl-cyst abundant, fusiform, rather thin-walled, $44-66 \times 15-17 \mu$. Ch-cyst crowded, same with pl-cyst.

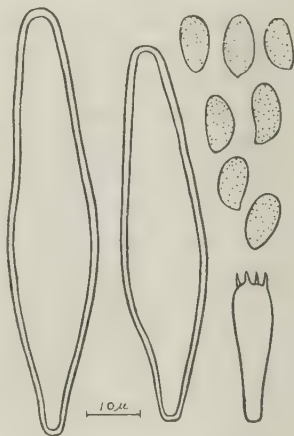


Fig. 37. *I. lilacina*
Pleurocystidia, basidium
and spores

Nom. Jap. Usumurasaki-asetake (nov.).

Hab. In the pine forests, Tanozawa Titibu (Simizu, Nov. 3, 1950); in the *Larix*-afforestation, Mt. Haruna (Oct. 2, 1951); Suwa, Nagano Pref. (Oct. 21, 1950).

8'. *Inocybe lilacina* (Boud.) Kauffm. forma *violacea* Y. Kobayasi forma nov.

A typo differt fructificatio omnino laete purpureo.

Nom. Jap. Murasaki-asetake (nov.).

Hab. Une, Yokosemura, Titibu (Simizu, Oct. 8, 1945).

This seems to be same with *Inocybe geophylla* var. *violacea* (Pat.) Heim, l.c. p. 141 pl. 2 fig. 4.

9. *Inocybe lucifuga* (Fr.) Quél.

C.J.V. p. 544; Sacc. S.F. V: 783 (1887) et F.I.C. p. 724; K. et M.I.S.F. pl. 99; Bres. I.M. pl. 751; Heim, In. p. 201 fig. 135 pl. XIII fig. 1-4. Syn. *Agaricus lucifugus* Fr. Obs. Myc. II: 50 (1818); Pat. Tab. Anal. VI: 17 no. 533 (1886).

(Sm+) No. 92. Pileus expanded campanulate, broadly umbonate, with thick and incurved margin, 1.5-2.5 cm broad, surface dry, dingy yellow or ochraceous, fibrillose, densely squamulose with darker appressed scales, marginal part somewhat rimose; context thick; lamellae adnexed, close, unequal, broad, cinereous, edges crenulate, white, farinaceous. Stipe equal, slightly bulbous at the base, solid, pale straw-coloured or pallid, silky fibrillose, rarely with fine fibrillose scales, 2.5-5 cm long, 3-4 mm thick. Pl-cyst scattered, ch-cyst gregarious, small, thin-walled, clavate, hyaline, $37-40 \times 9-13 \mu$. Pasidia 4-sterigmate. Spores ovoid or ellipsoid, smooth, inaequilateral, acute at the base, granulous, pale brown, $7-9 \times 4.5-5 \mu$.

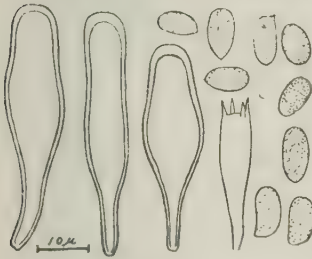


Fig. 38. *I. lucifuga*
Pleurocystidia, basidium
and spores

Hab. Nagaone, Titibu (Simizu, Sept. 30, 1950).

The cystidia of Japanese specimens seem to be smaller than those of European fungus. The description of *Inocybe hirtella* Bres. sensu Kauffmann in North American Flora is also fit to the present fungus, but the writer takes now *Inocybe lucifuga* in broad sense including *Inocybe hirtella* as variety.

10. *Inocybe rimosa* (Fr.) Quél.

C.J.V. p. 180 (1872); Sacc. F.I.C. p. 736; Rea, B.B. p. 195; Kauffm. N.A.F. p. 249; Bres. I.M. XV pl. 741; Imai, St. Agar. Hokkaido II: 219; Kobayasi, in Inkwas yokubutu-zukan pl. 258 fig. 1-3 (1939). Syn. *Agaricus (Inocybe) rimosus* Fr. Syst. Myc. I: 258 (1821); Berk. in Smith, Engl. Fl. V (2): 97 (1836); Cke. I.B.F. pl. 384. *Agaricus (Hebeloma) rimosus* Fr. Epicr. Myc. p. 174 (1838); Cke. Handb. Brit. Fung. I: 118 (1871).

(Sm+) No. 54. Pileus subconic-campanulate, then expanded umbonate to almost plane, 2-4 cm broad, margin occasionally radially broken, incurved, surface innately fibrillose, dry, faintly rimose, at first pale ochraceous, then darker, sometimes purplish tinted but not

brown, context rather thin, white; lamellae adnexed or sinuate by a tooth, conspicuously broad, unequal, close, grayish brown, edges faintly serrate, white-fimbriate. Stipe equal except the subbulbous base, solitary or fasciculate, solid, firm 7–10 cm long, 4–6 mm thick, silky white or at first pale pinkish, farinaceous at the apex, at last pale ochraceously tinged, texture white. Pl-cyst crowded, long

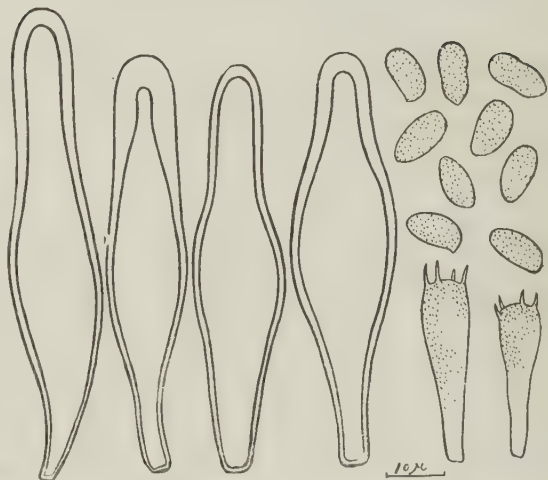


Fig. 39. *I. rimosa* Pleurocystidia, basidia and spores

clavate or fusiform with blunt end, thick-walled, hyaline, $60-74 \times 12-17 \mu$. Ch-cyst numerous or scattered, same with pl-cyst. Basidia 4-sterigmate, $22-26 \times 7-7.5 \mu$. Spores long ellipsoid, attenuated toward base, sometimes constricted, acute at base, smooth, $8-10 \times 5-5.5 \mu$.

Nom. Jap. Asetake or Dokuturutake.

Hab. Asakawa (Oct. 28, 1950) Mitutôge (Sept. 9, 1951).

Distr. Europe, North America, Siberia.

"Asetake", the Japanese name of this species, is commonly known in Japan as if this species may representative one in Japan. On the contrary, this is really not so common in Japan, as it is found only in autumn in mountaineous region. This seems to include several forms. The fungus, no. 22, collected in Nikko (Oct. 31, 1949) has somewhat larger and thin-walled cystidia, measuring $64-74 \times 15-27 \mu$ in size.

10'. *Inocybe rimosa* (Fr.) Quél. forma squarrosa Y. Kobayasi forma nov.

A typo differt pileo squarroso.

(Sm+) No. 90. Pileus expanded-conic or convexed, 3–4 cm broad, margin straight, folded and split, surface pale ochraceous, fibrillose, central part beset with recurved scales and somewhat areolate, context white, thick; lamellae ventricos-adnexed, subdistant, grayish, broad, edges serrate, white, farinaceous. Stipe subequal or incrassate towards



Fig. 40. *I. rimosa* f. *squarrosa*
Pleurocystidia and spores

the base, stuffed, with mycelial base, 7-9 cm long, 4-6 mm, thick, finely fibrillose, whitish or pale ochraceous, upper part farinaceous. Pl-cyst gregarious, ch-cyst fasciculate, fusiform, somewhat thick-walled, $56-68 \times 12-15 \mu$, hyaline. Basidia 4-sterigmate. Spores citriform or inaequilateral, smooth, acute at the base, granulous, pale ochraceous, $7-9 \times 4.5-5 \mu$.

Hab. In the afforestation of *Larix*, Mt. Haruna (Oct.2, 1951).

The present variety, which can be easily distinguished from the type species by subsquarrose pileus, seems also to be near *I. eutheles* (Berk. et Br.) Quél., differing, however, by long and slender stipes.

11. *Inocybe microspora* Lange

Ag. Denn. p. 38 pl. 3 f. 8 (1917) et F.A.D. p. 74 pl. 113 C. Syn. *Inocybe descissa* var. *microspora* (Lange) Heim, In. p. 236 f. 156 pl. XX f. 2, 3.

(Sm+) No. 10. Pileus expanded, broadly umbonate, with straight margin 2-2.5 cm broad, surface innately fibrillose, not squarrose, dark brown, paler toward the margin, slightly rimose, context white; lamellae adnexed, narrow, close or subdistant, grayish brown, edges white, farinaceous. Stipe equal, solid, except the bulbous base, silky, almost smooth, pale ochraceous, upper part pinkish, lower whitish, contorted, 4.5-6 cm long, 3-4 mm thick. Pl-cyst rich, fusiform with blunt apex, thick-walled, hyaline, $50-56 \times 12-15 \mu$. Basidia 4-sterigmate, $25 \times 6-7 \mu$. Spores minute, ovoid or ellipsoid, inaequilateral

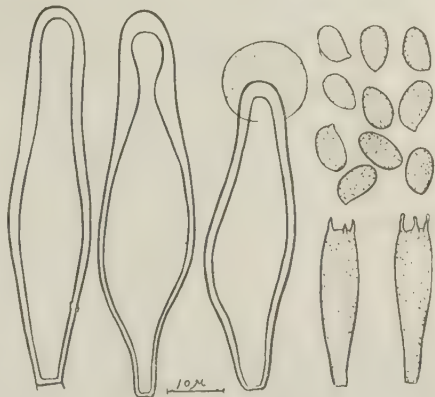


Fig. 41. *I. microspora*
Pleurocystidia, basidia and spores

with acute base, smooth, pale brown, $6-7.5 \times 4-4.5 \mu$.

Hab. Asakawa (Sept. 30, 1949); Titibu, Mt. Terao (Simizu, Oct. 25, 1950).

This fungus should be considered as conspecific with European *Inocybe microspora*, although the former has somewhat larger fruitbody and bulbous base of stipe.

12. *Inocybe mutata* (Peck) Massee

in Ann. Bot. XVIII p. 496 (1904); Kauffm. N.A.F. p. 255. Syn. *Agaricus* (*Hebeloma*) *mutata* Peck in Ann. Rep. N.Y. State Mus. XXIV: 69 (1872). *Hebeloma mutatum* Sacc. S.F. V: 797 (1887).

(Sm-) No. 93. Pileus expanded-umbonate, 2 cm broad, with slightly incurved or straight margin, surface dark brown, densely beset with darker and recurved scales; lamellae adnate, broad, not so close, pale dark brown, edges thick, entire or with fine serration. Stipe slender, firm, stuffed, equal, 5-6 cm long, 2-3 mm thick, concolorous, fibrillose, subsquarrose. Cystidia none; sterile cells on the edges fasciculate, clavate, thin-walled, $26-40 \times 7-12 \mu$. Basidia 4-sterigmate, $35-40 \times 8-9 \mu$. Spores oblong, inaequilateral, obtuse at both ends, pale grayish brown, $9.5-12 \times 5-6.5 \mu$.



Fig. 42. *I. mutata* Sterile cells on gill-edge and spores

Hab. In coniferous woods, about 2000 meters in altitude, Yazidaira, Sinano (Simizu, Aug. 13, 1950).

This species resembles *Inocybe hirsuta* Lasch and *In. calamistrata* Fr. in squarrose surface of pileus, but can be easily distinguished by not becoming bluish at the base of stipe. According to Heim, this species may be included in *In. hirsuta* Fr.

13. *Inocybe fastigiata* (Fr. ex Schaeff.) Quél.

C.J.V. p. 153 (1872); Karst. in Bidr. Finl. Nat. Folk. XXXII: 461 (1879); Sacc. F.I.C. p. 731; Rea, B.B. p. 206; Kauffm. N.A.F. p. 258; K. et M.I.S.F. pl. 92 (1925); Bres. I.M. pl. 744; Heim, In. p. 174 pl. 8; Lange F.A.D. p. 82. Syn. *Agaricus fastigiatus* Schaeff. Icon. Fung. IV: 13 pl. 26 (1772); Berk. Outl. Brit. Fung. p. 155 (1860); Cke. I.B.F. pl. 383.

(Sm-) No. 9. Pileus medium-sized or larger, 2.5-4.5 cm broad,

conic-campanulate, then sub-expanded, usually acutely umbonate, surface dry, innately and radially fibrillose, distinctly and finely rimose, yellow ocher, dark brown at umbo, marginal part splitted, incurved or straight, context white; lamellae adnexed or striate-decurrent, narrow, close, grayish brown, with finely serrate white edges. Stipe subequal or tapering upward, solid, same coloured with pileus or paler whitish, finely scaly or fibrillose, commonly without bulbous base, 3.5–6 cm long, 4–7 mm thick. Pl-cyst none.

Marginal cells densely fasciculate, clavate, thin-walled, $25\text{--}32 \times 10\text{--}12 \mu$. Basidia 2 or 4 sterigmate, $7\text{--}8 \times 2.5\text{--}3 \mu$. Spores ellipsoid, smooth, $8\text{--}10 \times 5\text{--}6 \mu$.



Fig. 43. *I. fastigiata* Sterile cells on gill-edge, basidia and spores

Nom. Jap. Ookinuhada-tomayatake (nov.)

Hab. Senkawa (Sept. 7, 9, 1949, Aug. 16, 1950); Kumotori-yama (Simizu, Sept. 15, 1950); Mitutôge, Hudi (Sept. 9, 1951).

Although the coloured figures illustrated in this paper show the slender forms, we find commonly the more robust fungus. This species seems to include many varieties and forms. *Inocybe Cookei*, the related species, can be distinguished from the present species by the following characters.

I. fastigiata

Pileus large, 2.5–4 cm. in diam.

Umbo Dark brown, distinctly, radially splitted exposing inner tissue.

Stipe commonly robust, silky white, maculated, dingy yellow, without bulbous base.

Spores $8\text{--}10 \times 5\text{--}6 \mu$.

I. Cookei

Pileus small, 1.8–3 cm. in diam.

Umbo pale ochraceous, splitting not so distinct.

Stipe slender, pale yellow with bulbous base.

Spores $6.5\text{--}8 \times 3.5\text{--}4.5 \mu$.

14. *Inocybe Cookei* Bres.

Fung. Trident. II: 17 pl. 121 (1892) et I.M. XV, pl. 748; Sacc. F.I.C. p. 735; Mass. Monogr. p. 492; Rea, B.B. p. 205; Kauffm. N.A.F. p. 257; K. et M., M.J.S.F. pl. 91; Heim, In. p. 194 fig. 133 pl. 3 fig. 3; Lange F.A.D. p. 83 pl. 114 A; Imazeki, Nature Guide 17 (1942).

(Sm-) No. 47. Pileus rather small, 1.5–3 cm broad, conic, then expanded, almost plane; surface pale yellowish, ochraceous, innately

silky-fibrillose, dry, not viscid, radially striated, but not distinctly

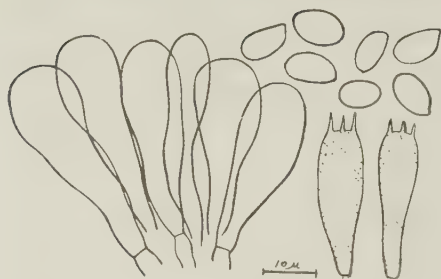


Fig. 44. *I. Cookei* Sterile cells on gill-edge, basidia and spores

rimose, margin straight; lamellae adnexed, thin, narrow, close, cinereous brown, edges whitish, finely serrate; context white, rather thick. Stipe equal except the bullate base, solid, silky-glossy, fibrillose, almost white or pale ochraceous, 3-4 cm long, 2.5-4 mm thick. Pl-cyst none; marginal

cells vesiculous, thin-walled. Basidia 4 (rarely 2) sterigmate, 17-23 × 6-8 μ. Spores ellipsoid, somewhat curved, smooth, pale grayish brown, 6.5-8 × 3.7-4.5 μ.

Nom. Jap. Kinuhada-tomayatake

Hab. Senkawa (Hasimoto, Aug. 16, 1950); Mitutôge, Hudi (Sept. 9, 1951); Takanosuyama, Titibu (Simizu, Sept. 15, 1950).

This has some resemblances to *Inocybe fastigiata*, as mentioned above.

15. *Inocybe avellanea* Y. Kobayasi sp. nov.

Pileus subconicus, umbonatus, 1.5-2.5 cm latus, primo glabrus, denique radiato-fibrillosus, margine rimosus, pallide cinereo-ochraceus, centro densiore, odore nauseus; lamellae adnexae, confertae, primo pallide lutescentes, deinde cinereo-ochraceae, acie serrulata. Stipes aequalis, fistulosus, 3-4 cm longus, 4 mm crassus, basi paullo incrassatus, subfibrillosus, pallide cinereus vel albus. Cystidia nulla. Cellulae marginales acierum fasciculatae clavatae, hyalinae, 25-44 × 7-15 μ. Basidia 4 sterigmata, 30 × 8 μ. Sporae ovoideae vel ellipsoideae, inaequilaterales, laeves, ochraceae, 7-11 × 5-7 μ.

(Sm-) No. 61. Pileus expanded-umbonate or subconic, 1.5-2.5 cm broad, surface at first glabrous, then radiately fibrillose or rimose toward the margin, pale grayish-ochraceous (avellaneous by Saccardo's Chromotaxia or inter Avellaneous-Deep olive buff by Ridgway), umbo darker, odour nauseous; lamellae adnexed, close, at first pale yellowish, then grayish-ochraceous, edges serrulate. Stipe equal, hollow, 3-4 cm long, 4 mm thick, slightly thickened at the base, pale grayish or almost white, subfibrillose. Cystidia none;

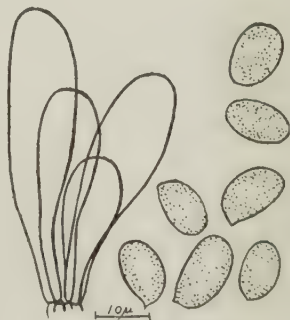


Fig. 45. *I. avellanea* Sterile cells on gill-edge and spores

sterile cells of the edges fasciculate, clavate, hyaline, $25-44 \times 7-15 \mu$. Basidia 4-sterigmate, $30 \times 8 \mu$. Spores ovoid or ellipsoid, inaequilateral, smooth, ochraceous, $7-11 \times 5-7 \mu$.

Hab. Takasinoyama, Titibu (Simizu, Oct. 15, 1950).

Except for the destitute of cystidia, the present species seems to be near *In. eutheles* (Berk. et Br.) Sacc.

16. *Inocybe maculata* Boud.

in Bull. Soc. Bot. Fr. XXXII: 283 pl. 9 fig. 2 (1885); Heim, In. p. 196 fig. 134 pl. 12 fig. 2; Lange, F.A.D. p. 82 pl. 116 E.

(Sm-) No. 6. Pileus large conic, then expanded-subconic, margin incurved or straight, 1.8-4 cm broad; surface conspicuously fibrillose, finely rimose, purplish brown, dry, the umbo being concolorous, not darker, canescently spotted with appressed scales; lamellae close adnexed, thin, olivaceous gray at first, then grayish brown, the edges thick, whitish. Stipe equal, straight, solid, silky glossy, white or ochraceous, finely striated, farinaceous, especially on the upper part, 3-5.5 cm long, 3-4 mm thick. Cystidia none; sterile cells on the gill-edges clavate or sub-

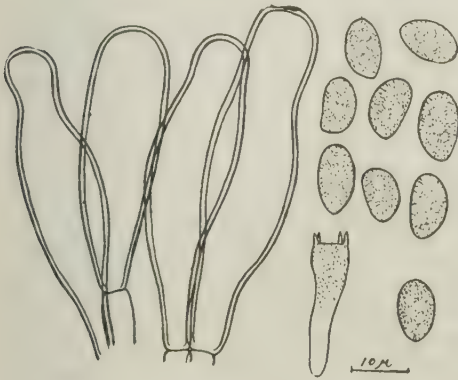


Fig. 46. *I. maculata* Sterile cells on gill-edge, basidium and spores

fusiformed, hyaline, somewhat thick—or thin-walled, fasciculate, $50-60 \times 12-15 \mu$. Basidia 4-sterigmate, $22-26 \times 5-7 \mu$. Spores broadly ellipsoid or phaseoliform, smooth, pale brown, granulous, $7-8.5 \times 5-5.5 \mu$.

Nom. Jap. Sirage-asetake (nov.)

Hab. Very commonly found in Senkawa (Aug. 16, 1950).

Distr. Europe, North America.

The spores of Japanese species are somewhat smaller than those of European fungus.

17. *Inocybe aureostipes* Y. Kobayasi sp. nov.

Pileus primo conicus, deinde expansus, margine rectus, 3-4 cm latus, fibrillosus, sericeus, subtiliter rimosus, ferrugineus; lamellae adnexae angustae, confertae, cinereo-umbrinae, acie minutissime serrulata, farinacea. Stipes aequalis fistulosus, fibrillosus,

fere glabrus, sursum aureo-fuscescens, deorsum sericeo-albus, 5-6 cm longus, 4-7 mm crassus. Cystidia nulla. Cellulae steriles acierum elongato-vesiculosae, fasciculatae, hyalinae $12-15 \times 20-27 \mu$. Sporae ovoideae vel ellipsoideae, laeves, pallide ochraceae $7-9 \times 4.5-5 \mu$.

(Sm—) No. 15. Pileus conic, then somewhat expanded, margin straight 3-4 cm broad; surface fibrillose, silky, finely rimose, bright brown (ferruginous—Cinnamon Rufous), context pale ochraceous; lamellae adnexed, narrow, close, grayish brown, the edges finely serrate, farinaceous. Stipe equal, hollow, fibrillose, almost glabrous, upper half bright orange brown, toward base silky white, 5-6 cm long, 4-7 mm thick. Cystidia none; sterile cells on the edges vesiculous, somewhat elongated stipitate, fasciculate, hyaline, $12-15 \times 20-27 \mu$. Basidia 2 or 4-sterigmate, $20-27 \times 7 \mu$. Spores ovoid or ellipsoid, smooth, acute or obtuse at the base, pale ochraceous, $7-9 \times 4.5-5 \mu$.

Hab. Senkawa.

The present fungus, belonging to *In. fastigiata*-Group, seems to be near *In. umbrinella*, but the latter has the almost whitish stipe and clavate sterile cells on the edges of lamellae. In appearance, this has also some resemblances to *In. jurana* and *In. friesii* f. *nemorosa*.

18. *Inocybe umbrinella* Bres.

in Ann. Myc. III: 161 (1905); Sacc. S.F. XXI: 158 et F.I.C. p. 733; Kauffm. N.A.F. p. 259; Bres. I.M. XV p. 738. Syn. *Inocybe fastigiata* (Fr.) Quél. var. *umbrinella* (Bres.) Heim, In. p. 188 fig. 125, 128 pl. X fig. 2.

(Sm—) No. 33, No. 52. Pileus thin fleshy, at first subconic, then expanded-umbonate, 2.5-6 cm broad, surface fein fibrillose, grayish brown or pale brown, radially striated, later rimose, the umbo darker, margin straight, sometimes incurved or reflexed, context white, somewhat fragile, odour none; lamellae adnexed, crowded, thin, unequal, pale grayish brown, edges serrulate, farinaceous. Stipe equal, flexuous, with truncate or somewhat bulbous base, glabrescent, almost white or pale ochraceous, glossy, 4-9 cm long, 5-8 mm diam. Cystidia none. Sterile

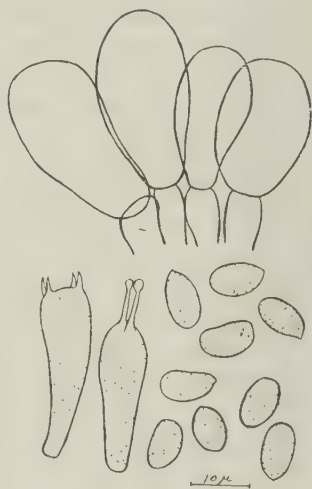


Fig. 47. *I. aureostipes*
Sterile cells on gill-edge,
basidia and spores



Fig. 48. *I. umbrinella* Sterile cells on gill-edge, basidium and spores

cells on the edges of lamellae fasciculate, thin-walled, hyaline, $34-60 \times 10-15 \mu$. Basidia 4-sterigmate, $25 \times 10 \mu$. Spores phaseoliform, smooth, $8-11 \times 5 \mu$, granulous, pale ochraceous.

Nom. Jap. Ootomaya-take.

Hab. Gregarious in mixed woods. Oosimizu, Oze (Sept. 27, 1950); Mt. Ryôgami, Titibu (Simizu, July 31, 1950); Mt. Aoi, Miyazaki Pref. (July 29, 1950).

18'. *Inocybe umbrinella* Bres. forma *pallidula* Y. Kobayasi f. n.

A typo differt pileo decolori olivaceo-ochraceo vel albido versus marginem.

(Sm—) No. 12. Pileus expanded-conic, margin straight, 3 cm broad, surface fibrillose, finely rimose, the umbo grayish brown, toward margin fading to olivaceous-ochraceous, the marginal part whitish, somewhat silky glossy, context thick yellowish; lamellae adnexed, very narrow, almost 1.5–2 mm, close, olivaceous gray, the edges whitish fimbriated. Stipes slightly tapering upward, solid, silky white, sordid brownish at the base, contorted, 7 cm long, 6 mm thick. Cystidia none; sterile cells on the edges long clavate, thin-walled, hyaline, densely fasciculate, $30-40 \times 9-10 \mu$. Basidia 4-sterigmate, $25-27 \times 8.5-10 \mu$. Spores subphaseoliform, $7-10 \times 5-5.5 \mu$.

Hab. In frondose woods, Mt. Takao, Tokyo (Oct. 9, 1949).

The fungus illustrated by Heim (l.c. pl. XI fig. 2) as *In. fastigiata* var. *umbrinella* seems to be identical with the present form.

19. *Inocybe montana* Y. Kobayasi sp. nov.

•Pileus minutissimus 5–11 mm (plerumque 8–9 mm) latus, convexus vel planus, non

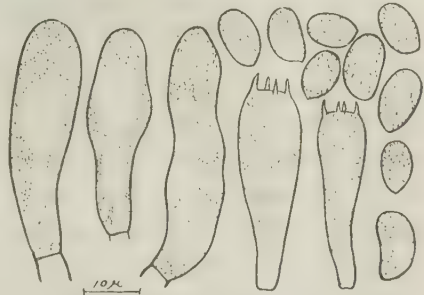


Fig. 49. *I. umbrinella* f. *pallidula* Sterile cells on gill-edge, basidia and spores

umbonatus, superficie e pilis lanuginosis cinereis obtectis margine fimbriatus; lamellae adnexae latae, remotae, glauco-umbrinus, acie serrata cinerea. Stipes brevis curvatus, subaequalis, basi bullatus umbrinus sursum scabrus, 1.2-1.5 cm longus, 0.8-1.2 mm crassus. Pl-cystidia sparsa, ventricosa, utrinque subtruncata, crassiparietalia, hyalina, $46-66 \times 11-13 \mu$. Caul-cystidia conspicua. Basidia minuta, 2 vel 4-sterigmata, $12-15 \times 5-6 \mu$. Sporae ovoideae vel ellipsoideae, verrucosae, pallide umbrinae, $6-6.5 \times 4.5-5 \mu$.

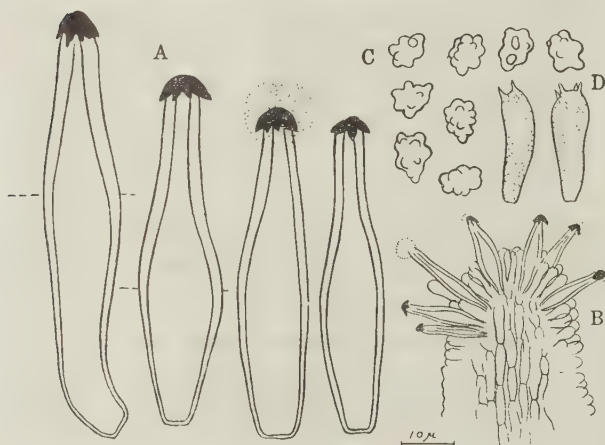


Fig. 50 *I. montana* Pleurocystidia (A), section of gill-edge (B), spores (C) and basidia (D)

(An+) No. 23.

Pileus very small, 5-11 mm broad (commonly 8-9 mm), convex or almost plane, not umbonate; surface dry, densely covered with radially arranged cinereous lanuginose hairs on brown ground, becoming glabrescent with age, neither glossy nor viscid, margin somewhat fimbriate, context pale brownish; lamellae

adnexed, broad, distant, grayish brown, edges serrate cinereous. Stipe very short, curved, subequal, somewhat bullate at the base, dark brown, scabrous by dense caulocystidia, 1.2-1.5 cm long 0.8-1.2 mm thick. Hyphae of peridial layer of pileus thick-walled, subhyaline, branched, with clamp-connections. Pl-cystidia scattered, ventricose or fusiform with subtruncate ends, thick-walled, hyaline, $46-66 \times 11-13 \mu$. Ch-cystidia somewhat gregarious. Caul-cystidia conspicuous, same form with Pl-cystidia, fasciculate or scattered, mingled with vesiculous thin-walled sterile cells. Basidia very small, 2 or 4-sterigmata, $12-15 \times 5-6 \mu$. Spores ovoid or ellipsoid in outline, verrucose, pale brown, $6-6.5 \times 4.5-5 \mu$.

Nom. Jap. Miyama-asetake (nov.).

Hab. Gregarious in the coniferous woods, about 1600 meters in altitude, Sanpei Pass, Oze-District (July 1950).

This species is distinct by having lanuginose pileus and caulocystidia.

20. *Inocybe plumosa* (Fr.) Quél.

C.J.V. p. 179; Gillet, Champ. Fr. p. 515 (1878); K. et M., I.S.F. pl. 103; Imai, St. Agar. Hokkaido II: 224. Syn. *Agaricus plumosus* Fr. Syst. Myc. I: 256 (1821). *Inocybe carpta* Bres. Fung. Trid. I: 50 pl. 54 (1884) et I.M. p. 16 pl. 756 (1930); Sacc. F.I.C. p. 723. *Astrosporina plumosa* Rea, B.B. p. 214.

(An+) No. 88. Pileus conic, umbonate, 1.8–2.3 cm broad, margin straight or somewhat recurved; surface dark brown with purplish tint, almost black in the middle, scales densely and radially arranged, distinctly recurved, not glossy, not rimose; lamellae adnexed, close, unequal, grayish brown, edges fimbriate, whitish. Stipe attenuate upward, stuffed, 3–3.5 cm long, 2–3 mm thick, incrassate at base but not discoid, surface pale ochraceous floccose or fibrillose, not glossy. Cystidia scattered on hymenium and ridges, clavate, hyaline, somewhat thin-walled, $42\text{--}51 \times 11\text{--}15 \mu$. Basidia 2 or 4-sterigmate, $25 \times 7 \mu$. Spores trapezoidal form, commonly 4–6 angulate, beset with several distinct cone-like protuberances, ochraceous, $6\text{--}8 \times 5\text{--}6 \mu$.

Nom. Jap. Kuronise-tomayatake

Hab. Among mosses on decaying stumps, near Sanjô-water fall, Oze (M. Ookubo, Aug. 7, 1951).

This species seems to be very rare in Japan.

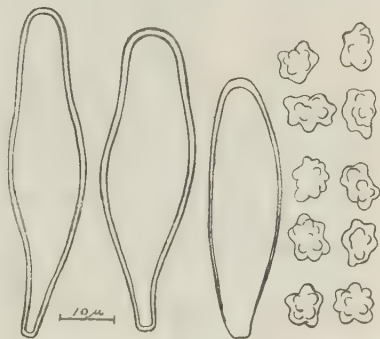


Fig. 51. *I. plumosa* Pleurocystidia and spores

21. *Inocybe lanuginella* (Schroet.) Lange

F.A.D. p. 87 pl. 117 fig. A. Syn. *Astrosporina lanuginella* Schroet. Pilze Schles. I: 577 (1889). ? *Inocybe cicatricata* Ellis et Ev. in Journ. Myc. V: 25 (1889); Kauffm. N.A.F. p. 236.

(An+) No. 87. Pileus conic, expanded almost plane, commonly umbonate, 16–30 mm broad, margin straight or at times incurved, 4–6-rimose; surface dry, not glossy, grayish brown, paler toward margin, finely fibrillose or scaly, frequently areolate and dark purplish brown at the umbo, context white; lamellae adnate, moderately close, unequal, pale grayish, the edges entire, finely fimbriate. Stipe equal, stuffed,



Fig. 52. *I. lanuginella*
Pleurocystidia, basidium and
spores

3-4.5 cm long, 2-3 (-5) mm thick, not discoid at the base, but somewhat tomentose, surface silky fibrillose, pale brown, upward glossy and paler. Pl-cystidia scattered fusiformed or ampuliformed, thick-walled, sometimes long stipitate, $37-67 \times 16-17 \mu$; ch-cystidia fasciculate. Basidia 2 or 4-sterigmate, $30 \times 7 \mu$. Spores elongate-angular, obscurely tuberculate, ochraceous or somewhat purplish, $7-11 \times 5-6 \mu$.

Hab. Gregarious on soil in the nursery of *Populus*, Meguro, Tokyo (S. Toki, July 13, 1951).

According to Heim, North American *In. cicatricata* Ell. et Ev. is considered to be the conspecific with the present fungus.

22. *Inocybe squamulosa* Y. Kobayasi sp. nov.

Pileus conicus, maturitate expansus planus vel umbonatus, 1-2 cm latus, castaneus vel purpureo-brunneus, squamulosus, squamulis cinereis, recurvatis, margine subrimosus, carne tenue pallide castanea, lamellae adnexae, ventricosae, latae, confertae, pallide cinereae vel ochraceae, acie subtiliter serrulata. Stipes aequalis solidus, 2-3.5 cm longus, 1-1.8 mm crassus, pallide ochraceus, farinaceus, basi non bullatus, mycelioideus. Pl-cystidia et ch-cystidia sparsa, fusiformia, apice truncata, hyalina, crassiparietalia $44-50 \times 10-12 \mu$. Basidia 4 vel 2-sterigmata, $23-26 \times 7 \mu$. Sporae ovoideae oblongae vel polyhedrae, distincte nodulosae, ochraceae, $7.5-8.5 \times 5-6 \mu$.

(An+) No. 45. Pileus conic, then expanded, plane or umbonate, 1-2 cm broad; surface castaneous-brown or violaceous-brown, squamose with fine, recurved cinereous squamules, marginal part split, subrimose; context thin, pale castaneous; lamellae adnexed, ventricose broad, somewhat close, pale cinereous or ochraceous, edges finely serrate. Stipe equal, solid, 2-3.5 cm long, 1-1.8 mm thick, pale ochraceous, finely farinaceous, basal part not bullate or somewhat thickened with mycelial mass. Pl- and ch-cystidia scattered, fusiform with truncate ends hyaline, thick-walled, 44-

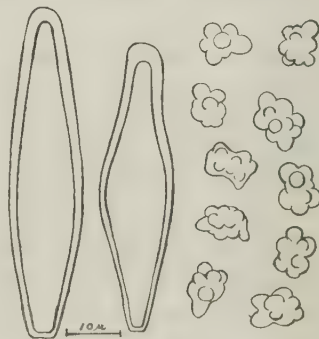


Fig. 53. *I. squamulosa*
Pleurocystidia and spores

50×10–12. Basidia 4 or 2-sterigmate, 23–26×7 μ . Spores ovoid, oblong or polyhedral, distinctly nodulose, ochraceous, 7.5–8.5×5–6 μ .

Nom. Jap. Kedadati-asetake (nov.).

Hab. Senkawa (Aug. 16, 1950); Nagasawa-yama, Titibu (Simizu, Sept. 7, 1950).

The present fungus looks like *In. scabella*, but can be separated from the latter in having no marginate bulb.

23. *Inocybe polycystidiata* Y. Kobayasi sp. nov.

Pileus conicus vel convexus, dein expansus, umbonatus, margine crassus rectus vel involutus, 0.7–2 cm latus, plus minusve tomentosus, subviscidus, aureo-umbrinus, centraliter obscurior; lamellae adnexae, crassiusculae, angustae, inaequales, remotae, acie serrata, primo pallide cinereae, dein pallide roseo-umbrinae. Stipes centralis vel subeccentricus aequalis solidus, striatus, ochraceus. Pl-cystidia, ch-cystidia et caul-cystidia copiosissima gregaria, turbinata vel fusiformia, crassiparietalia, hyalina, 50–70×10–15 μ . Sporae minutae, polyhedrae, sine nodulo, pallide roseo-brunneae, 5–6.5×4.5–5 μ .

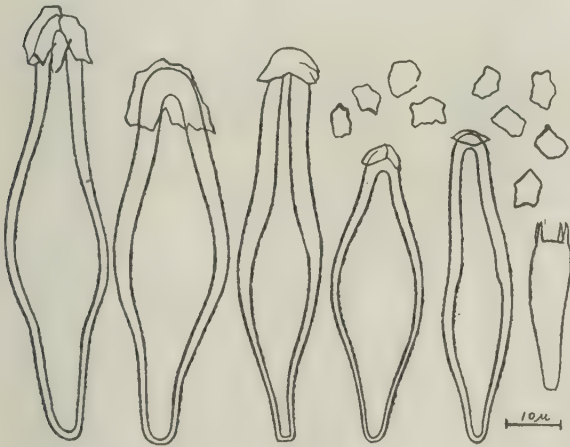


Fig. 54. *I. polycystidiata*
Pleurocystidia, basidium and spores

(An+) No. 86.

Fructification small, but robust and firm. Pileus conic or convexed, then expanded plane, umbonate, margin thick, straight or involute, 0.7–2 cm broad, surface somewhat tomentose, subviscid, orange-brown, the umbo darker; lamellae adnexed, firm, split, unequal, thick, narrow, somewhat distant, with

obtuse serrate edges, at first pale grayish, then pale red-brown. Stipe central or eccentric, equal except for the subbullate base, solid, firm, surface glabrous, striated, ochraceous. Pl- and ch-cystidia conspicuously gregarious, turbinated or fusiform, thick-walled, hyaline 50–70×10–15 μ . Caul-cystidia distinct, the same with pl-cystidia. Basidia? Spores very small, polyhedral, without nodules, pale reddish brown, 5–6.5×4.5–5 μ .

Hab. Hituji-yama, Titibu (Simizu, Sept. 12, 1950).

24. *Inocybe umbratica* Quél.

in Assoc. Fr. Av. Sci. Compte Rendu XII: 500 pl. 6 fig. 77 (1883); Sartory et Maire, Syn. genre *Inocybe* p. 235 (1923); Kauffm. N.A.F. p. 241; Bres. I. M. p. 734 pl. 1734, 2; K. et M., I.S.F. II pl. 1043 (1930); Heim, In. p. 143 fig. 111; Imazeki, Nature Guide, Kinoko pl. 17 (1942). Syn. *Inocybe commixta* Bres. Fung. Trid. I: 53 et 103 pl. 58, 2 (1884). *Inocybe leucocephala* Boudier, in Bull. Soc. Bot. Fr. XXXII: 282 pl. 9, 1 (1885). *Inocybe geophylla* var. *umbratica* Quél., Enchir. p. 97 (1886). *Inocybe infida* (non Peck) Massee, Monogr. gen. *Inocybe* p. 467 (1904). *Astrosporina infida* Rea, B.B. p. 209.

(An+) No. 14. Pileus expanded-umbonate, 2-3.5 cm broad, with radiately rimose, involute or reflexed marginal part; surface smooth, silky-white with faint cinereous tinge; lamellae free crowded, pale violaceous brown, edges minutely serrate and pruinose. Stipe equal, commonly with turbinate-bulbous base, solid, white with blue-tinge

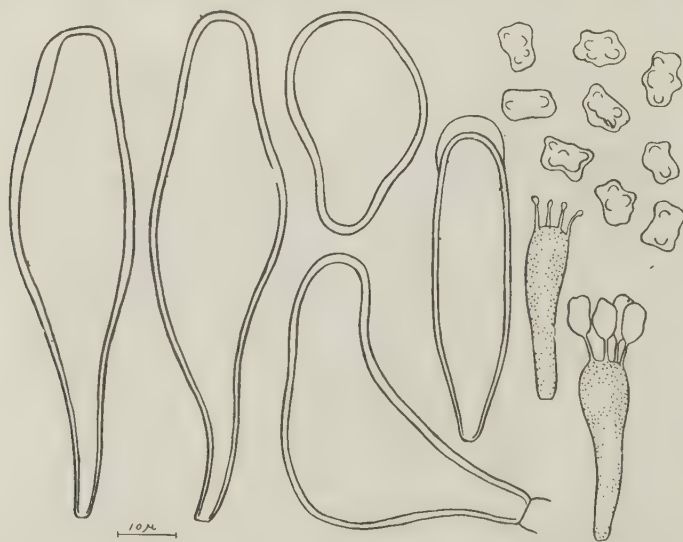


Fig. 55. *I. umbratica* Pleurocystidia, basidia and spores

2.5-5 cm long, 4-8 mm thick. Pl-cystidia scattered or abundant, medium-sized, bladder-form, fusiform or irregularly curved, hyaline, slightly thick-walled, $46-74 \times 11-20 \mu$; ch-cystidia same with pl-cystidia or bladder-form, fasciculate. Basidia 4-sterigmate, $21-23 \times 5.5-7 \mu$. Spores subrectangular in outline or polyhedral, tuberculate ochraceous, $7-7.5 \times 3-5 \mu$.

Nom. Jap. Sironise-tomayatake.

Hab. Senkawa (Oct. 11, 1949, Jun. 30, 1950, Aug. 21, 1950) Syakujii Park, Tokyo (Imazeki, Oct. 17, 1936) Matudo, Tiba Pref. (Imazeki, Oct. 16, 1942), Kunitati, Tokyo (Imazeki, Oct. 23, 1933) Kitakogane, Tiba Pref. (Imazeki, Oct. 6, 1935).

The present species seems to be near *In. geophylla* in white appearance, differing, however, in the shape of spores and turbinate-bulbous base of stipe.

25. *Inocybe lutea* Y. Kobayasi et Hongo sp. nov.

Pileus dilatato-subconicus, dein convexus, subumbonatus, rimosus, 1.5–4 cm latus, aurantius, fibrillosus, fibris radiatim ordinatis, ochraceis ve umbrinis, umbone castaneo, ad marginem discoloris, non viscidus, carne tenue, cremea; lamellae confertae adnexae vel fere liberae, primo lutescentes, dein glauco-ochraceae. Stipes fistulosus, lutescens, fibrillosus 2–4 cm longus, 3.5–5 mm crassus, basi bulbosus, sursum farinaceus deorsum longitudinaliter striatus. Pl-cystidia sparsa, clavata vel fusiformia, crassiparietalia, $42\text{--}60 \times 12\text{--}15\ \mu$. Basidia minuta 2 vel 4-sterigmata, $19\text{--}21 \times 7\text{--}7.5\ \mu$. Sporae elongato-polyhedrae, verrucosae, ochraceae, $5.5\text{--}7 \times 4.5\text{--}5\ \mu$.

(An+) No. 72. Pileus broadly subconic, then convex-expanded, coarsely rimose, subumbonate, 1.5–4 cm broad; surface orange-yellow, with ochraceous or brown and radially arranged fibrils, denser at the umbo almost chestnut brown, fading to the margin, not viscid, flesh thin, with iod-like smell, cream-yellow; lamellae close, adnexed or almost free, at first yellow, then grayish ochraceous. Stipe with bulbous base, tapering upwards, hollow, yellow fibrillose, at base with longitudinal brown striation, upper part farinaceous, 2–4 cm long, 3.5–5 mm thick, at first connected with the margin of pileus with arachnoid yellow veil. Pl-cystidia scattered, clavate or fusiform, thick-walled, especially in the upper part, $42\text{--}60 \times 12\text{--}15\ \mu$; ch-cystidia same form with pl-cystidia, fasciculate. Basidia small, 2 or 4-sterigmate, $19\text{--}21 \times 7\text{--}7.5\ \mu$. Spores elongate polyhedral ochraceous, verrucose, $5.5\text{--}7 \times 4.5\text{--}5\ \mu$.

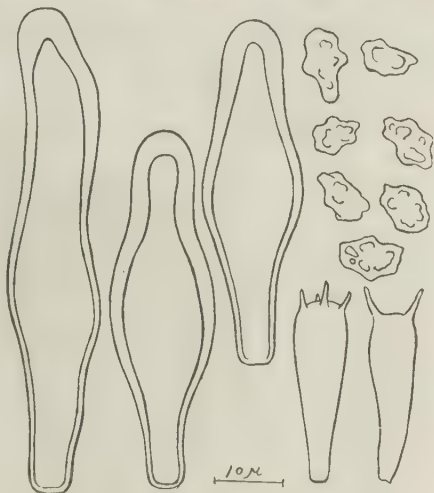


Fig. 56. *I. lutea*
Pleurocystidia, basidia and spores

Nom. Jap. Kiiro-asetake (nov.).

Hab. Miidera (Hongo, Jul. 3, 1950); Tyauzu-yama, Ootu (Hongo, Oct. 1950); Yamasiro (Akai, Sept. 7, 1935).

This new species has some resemblances to *In. trechispora* and *In. Davisiana*, although the following discriminating characteristics may be pointed out.

In. trechispora Surface of pileus viscid, pale-stramineous to tan; lamellae sinuate-adnexed; stipe solid.

In. Davisiana Lamellae sinuate-adnexed; stipe solid; cystidia thin-walled; sterile cells cystidia-like on the edges of lamellae.

26. *Inocybe trechispora* (Berk.) Karst.

in Bidr. Finl. Nat. Folk XXXII: 465 (1879); Kauffm. N.A.F. p. 234; Heim, In. p. 137 fig. 109; Lange F.A.D. p. 88 pl. 118 B. Syn. *Agaricus* (*Hebeloma*) *trechispora* Berk. Out. Brit. Fung. p. 156 (1860); Cke I.B.F. pl. 403 (443).

(An+) Pileus at first conical then expanded-plane, umbonate, margin straight or reflexed, split, 1.5–2.5 cm broad; surface subviscid,

appressed-fibrillose, the umbo pale ocher, elsewhere stramineous or yellowish pale brown; lamellae adnate or decurrent with striation, clouded or subdistant, rather narrow, pinkish gray or grayish brown, ridges finely farinaceous. Stipe equal, not bullate, firm at the base, solid, straight or flexuose, 3–4 cm long, 2–3 mm thick, glabrous or finely farinaceous, pale ochraceous. Trama prosenchymatous. Pl-cystidia abundant, hyaline, conspicuously protruding, thick-walled, $42\text{--}60 \times 10\text{--}15 \mu$. Ch-cystidia fasciculate. Basidia 4-

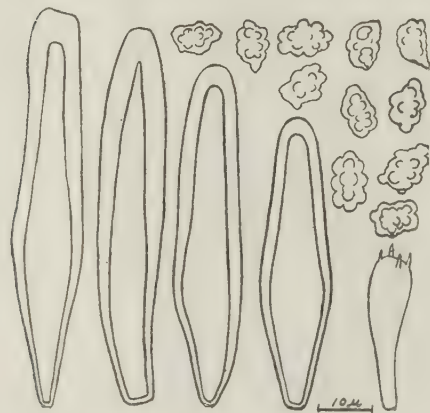


Fig. 57. *I. trechispora*
Pleurocystidia, basidium and spores

sterigmate, $24\text{--}26 \times 6\text{--}7 \mu$. Spores polyhedrate, 4–5 angulate with distinct and obtuse nodules, brown, $6\text{--}9 \times 5\text{--}6 \mu$.

Hab. Meguro, Tokyo (Toki).

27. *Inocybe coerulescens* Y. Kobayasi sp. nov.

Pileus infundibuliformis, dein expansus, margine involutus, circa 6 cm latus,

glauco-umbrinus, subtiliter fibrilloso-striatus et squamulosus, umbone maturitate coerulescente; lamellae adnatae, confertae, obscure glaucae. Stipes aequalis, basi bulbosus, solidus, squarrosus, circa 7.5 cm longus, 9 mm crassus. Pl.-cystidia et ch.-cystidia magna, sparsa, fusiformia vel ventricosa, crassiparietalia, $74-80 \times 20-22 \mu$. Basidia 4-sterigmata, $19-23 \times 6-7.5 \mu$. Sporae polyhedrae verrucosae, ochraceae, $7-11 \times 6.5-7 \mu$.

(An+) No. 1. Pileus expanded, somewhat infundibuliform, margin involute, about 6 cm broad; surface grayish-brown, beset with radially arranged brown fibrillose striations and fine scales, at maturity conspicuously coerulescence in the middle part, somewhat stinking; lamellae adnate, close, dark gray. Stipe equal, somewhat

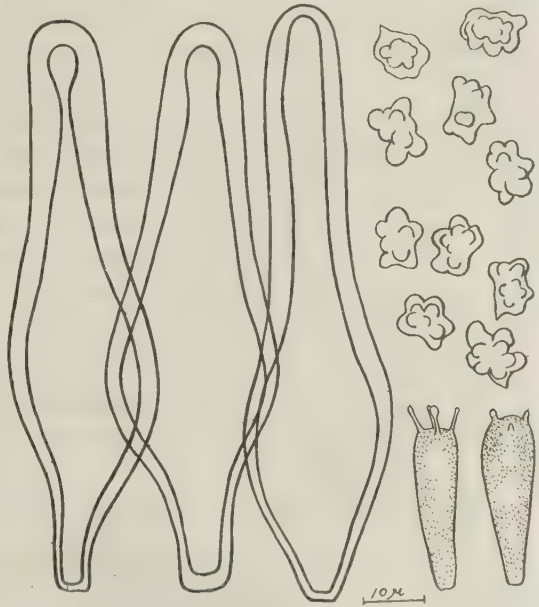


Fig. 58. *I. coerulescens*
Pleurocystidia, basidia and spores

bulbous at base, stuffed, with fine thread-like scales, ca 7.5 cm long, 9 mm thick. Pl.-cystidia very large, scattered, fusiform or ventricose, thick-walled, $74-80 \times 20-22 \mu$; ch.-cystidia same form with pl.-cystidia. Basidia 4-sterigmate, $19-23 \times 6-7.5 \mu$. Spores polyhedral, verrucose, ochraceous, $7-11 \times 6.5-7 \mu$.

Nom. Jap. Aohu-asetake (nov.).

Hab. Senkawa (Hasimoto, July 8, 1949).

This fungus has such a characteristic becoming distinctly coerulescent on the surface of pileus at maturity as *In. corydalina* Quél., although the latter can be distinguished by smooth spores.

28. *Inocybe praetervisa* Quél.

in Bres. Fung. Trid. I p. 35 pl. 38 (1883) et C.J.V. p. 500; Rea in Trans. Brit. Myc. Soc. II: 62 pl. 5 fig. 2 (1903); Sacc. F.I.C. p. 729; K. et M., I.S.F. pl. 106; Bres. I.M. p. 16 pl. 760; Heim, In. p. 315 fig. 187 pl. 30 fig. 1-2 (1931); Imai, St. Agar. Hokkaido II: 223 (1938);

Lange, F.A.D. p. 84 pl. 115 A. Syn. *Agaricus devulgatus* Britz. Derm. et Melanosp. p. 149 pl. 232 fig. 140 (1883). *Inocybe devulgata* Sacc. S.F. V: 782 (1887). *Astrosporina praetervisa* Schroet. Pilze Schles. I; 576 (1889); Rea, B.B. p. 209.

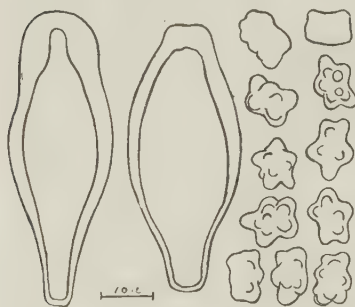


Fig. 59. *I. praetervisa*
Pleurocystidia and spores

(An+) No. 85. Pileus large, subconic, then expanded, umbonate, 3–6 cm broad; surface innately fibrillose, finely rimose, yellow-ocher or ochraceous (not brown), margin split; lamellae adnexed, crowded, cinereous brown. Stipe solid, 6 cm long 6 mm thick, whitish or stramineous, with emarginate bulb. Ch—and pl-cystidia fusoid-ventricose, thick-walled, $45-60 \times 17-19 \mu$. Spores angular nodulose, elongate $8-10 \times 6-7 \mu$.

Nom. Jap. Nise-asetake.

Hab. Tosima-ku, Tokyo (Imazeki, Sept. 20, 1936).

29. *Inocybe neoumbrina* Y. Kobayasi sp. nov.

Pileus gracilis conico-umbonatus 8–12 mm latus purpureo-umbrinus, innatim cinereose fibrillosus, subtiliter rimosus, umbone obscure glauco, farinaceo; lamellae adnatae, latae, subremotae, inaequales, fusciscentes, subtiliter asperulatae, acie integra. Stipes aequalis, solidus, pallide ochraceus, plus minusve sericeus, 2 cm longus 1 mm crassus. Pl-cystidia sparsa vel partim aggregata, crasso-fusiformia vel ampullacea, tenuiparietalia, $42-50 \times 15-22 \mu$. Sporae angulato-oblongae, verrucosae, fusciscentes, $7-7.5 \times 4.5-5.5 \mu$.

(An+) No. 7, 49. Pileus small, conic umbonate, 8–12 mm broad, surface dry purplish brown (Saccardo's lateritius), innately and cinereously fibrillose, finely rimose, the umbo dark gray, farinaceous, context white; lamellae adnate, broad, subdistant, unequal, brown, finely asperulate by prominent cystidia, edges entire. Stipe equal, solid, pale ochraceous, somewhat silky glossy with

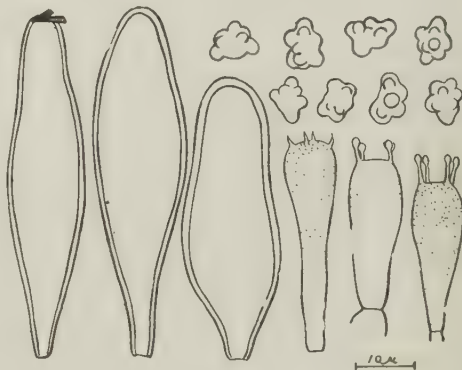


Fig. 60. *I. neoumbrina*
Pleurocystidia, basidia and spores

white fibrillose hairs, 2 cm long, 1 mm thick. Pl-cystidia moderately scattered or locally aggregate, thick-fusiform or ampullaceous, thin-walled, $42-50 \times 15-22 \mu$. Basidia 2 or 4-sterigmate, $6.5-7 \times 21-24 \mu$. Spores angular-oblong, verrucose, brown, $7-7.5 \times 4.5-5.5 \mu$.

Hab. Senkawa (Sept. 7, 1949).

Compared to *In. umbrina*, the fruitbodies of present new species are very small, having slender stipes and more thicker cystidia. From *In. castanea* and *In. Earleana*, this can be distinguished by the thin-walled cystidia.

30. *Inocybe senkawaensis* Y. Kobayasi sp. nov.

Pileus minutus, primo campanulatus, dein expanso-conicus vel umbonatus planus, margine involutus, rectus vel reflexus, 8-17 mm latus, pallide lutescens aut ochraceus aut fere albidus, appresso-fibrillosus, subtiliter rimosus, margine fimbriatus; lamellae adnexae, confertae angustae, inaequales, roseo-ochraceae, acie crasso-fimbriata. Stipes erectus vel curvatus, aequalis, solidus, glabrescens, cremeus, basi paullo incrassatus, 2-3.5 cm longus, 1.5-2.5 mm crassus. Pl-cystidia subgregaria, fusiformia, crassiparietalia, hyalina, $37-40 \times 10-11 \mu$. Basidia minima, 4-sterigmata, $25-27 \times 6 \mu$. Sporae elongato-angulares, tuberculis sparsis, pallide ochraceae, $6-7 \times 4.5-5 \mu$.

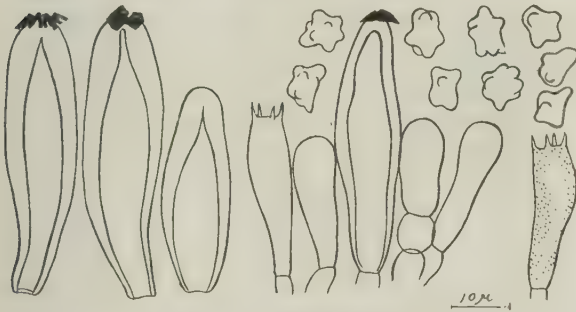


Fig. 61. *I. senkawaensis*
Pleurocystidia, basidia and spores

(An+) No. 43, 8.

Pileus small campanulate at first, then expanded-conic or umbonate, plane, margin involute, straight or reflexed, 8-17 mm broad; surface pale yellow or ochraceous or almost whitish, dry appressed-fibrillose, finely rimose, but not distinct, margin

somewhat fimbriate; lamellae adnexed, close narrow, unequal, ochraceous with pale rose tint, edges thick fimbriate, the odor none. Stipe straight or curved, equal above the slightly incrassate base, solid, cream-coloured, in appearance glabrous but with fine appressed white hairs, 2-3.5 cm long, 1.5-2.5 mm thick. Pl-cystidia subgregarious, fusiform, very thick-walled, hyaline, $37-40 \times 10-11 \mu$; ch-cystidia fasciculate. Basidia small, 4-sterigmate, $25-27 \times 6 \mu$. Spores angular somewhat elongate, with scattered tubercles, pale ochraceous, $6-7 \times 4.5-5 \mu$.

Nom. Jap. Hime-asetake (nov.).

Hab. Senkawa (Aug. 16, 1950).

31. *Inocybe putilla* Bres. .

Fungi Trid. I: 81 pl. 88 (1887) et I.M. pl. 764; Sacc. F.I.C. p. 732 (ut. *In. pusilla*).

(An+) No. 2, 2'. Pileus convex, then expanded convex, 0.8–2 cm broad; surface not glossy, ochraceous or fuscascens, densely covered with innate-silky fibrillose hairs, somewhat rimose at maturity, the odour somewhat unagreeable; lamellae adnate, subdistant unequal, at first pale rose-coloured, then pale grayish brown, edges crenulate finely farinaceous. Stipe stout, equal, 1.5–4 cm long, 2–3 mm thick, solid, pale yellow with pinkish tint, silky, appressed fibrillose, at the upper part conspicuously fibrillose and pinkish, context pale purplish brown.

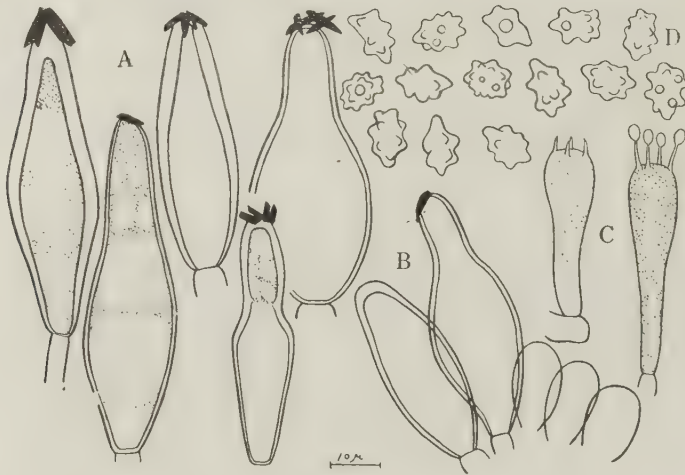


Fig. 62. *I. putilla* Pleurocystidia (A),
a part of gill-edge (B), basidia (C) and spores (D)

Pl-cystidia gregarious, fusiform, conspicuously ventricose, thick-walled, hyaline, upper half extruded from the hymenium, $34\text{--}74 \times 11\text{--}17 \mu$ (commonly $45 \times 15 \mu$); sterile cells vesiculose, thin-walled, $11\text{--}17 \times 8\text{--}11 \mu$, mixed with pale brownish or hyaline ch-cystidia on the edges of lamellae. Basidia 4 (rarely 2) sterigmate, $20\text{--}30 \times 6\text{--}7 \mu$. Spores large oblong, angular, conspicuously verrucose, pale ochraceous $6\text{--}10 \times 5\text{--}6.5 \mu$ (commonly $9 \times 6 \mu$).

Hab. Among the fallen leaves in deciduous afforestation, Senkawa (Hasimoto, Jun. 30, 1950).

32. *Inocybe inaensis* Y. Kobayasi sp. nov.

Pileus mediocris, convexus, umbonatus, margine incurvatus, circa 17 mm latus, ochraceus, non nitidus, umbone umbrineo-glaucos, versus marginem pallidioris, fibrilloso-rimosus; lamellae adnexae, obscurae purpureo-glaucos, subremotae, acie minute fimbriatae, albidae. Stipes aequalis 2.5 cm longus 2.5 mm crassus, basi bulbosus, pallide ochraceus vel fere albus, fibrillosus, non nitidus. Pl-cystidia sparsa, gracilia, fusiformia, crassiparietalia $42 \cdot 56 \times 8.5-12 \mu$. Ch-cystidia gregaria, robusta, crassiparietalia, $37-44 \times 12-17 \mu$. Basidia 4-sterigmata. Sporae ellipsoideae verrucosae, umbrinae, $6.5-9 \times 4.5-6 \mu$.

(An+) No. 16. *Pileus* medium-sized, convex, umbonate, margin incurved, 17 mm broad; surface ochraceous, not glossy, brownish gray at the umbo, paler toward the margin, fibrillosely splitted, exposing pale

ochraceous inner tissue; lamellae dark purplish gray, adnexed, not so crowded, edges finely fimbriate, whitish. Stipes equal except the bulbous base, 2.5 cm long, 2.5 mm thick, pale ochraceous or almost white, fibrillose, not glossy, smooth by the naked eyes, but minutely farinaceous. Pl-cystidia scattered slender fusiform, thick-walled, $42-56 \times 8.5-12 \mu$; ch-cystidia gregarious, robust, thick-walled, $37-44 \times 12-17 \mu$. Basidia 4-sterigmate. Spores ellipsoid, verrucose, brown, $6.5-9 \times 4.5-6 \mu$.

Hab. In the deciduous woods, Wada, Nagano Pref. (Oct. 17, 1949). In appearance, this species resembles to *In. asterospora* except for the protuberances of spores.

33. *Inocybe umbrina* Bres.

Fung. Trident. I: 50 pl. 55 (1884) et I.M. XVI pl. 758; Sacc. F.I.C. p. 733; Mass. Monogr. p. 471; Kauffm. N.A.F. p. 238; K. et M.I.S.F. pl. 104 (1930); Heim, In. p. 357 fig. 204 pl. 32 f. 3; Lange F.A.D. p. 86 pl. 118 G; Y. Kobayasi, Inkwas yokubutu-Zukan, p. 535 (1939).

(An+) No. 81. *Pileus* expanded, subumbonate or almost plane, 2-2.5 cm broad; surface dry or subviscid, appressed fibrillose, chestnut-brown or dark brown, darker at the center, long rimose, sometimes

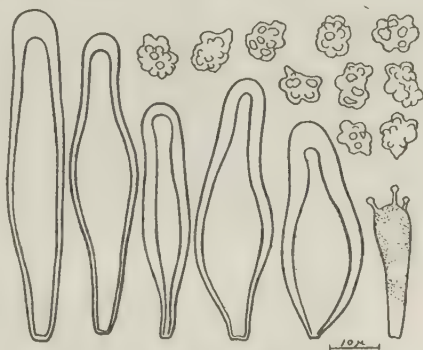


Fig 63. *I. inaensis*
Pleurocystidia, basidium and spores

finely scaly at the center, context ochraceous; lamellae adnate, unequal,

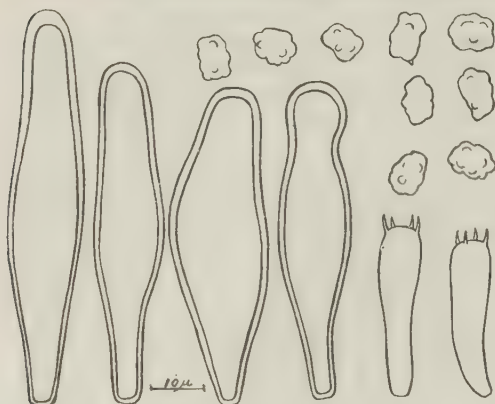


Fig. 64. *I. umbrina*
Pleurocystidia, basidia and spores

close, broad, grayish brown, edges entire. Stipe equal with somewhat bulbous base, stuffed; surface almost glabrous pale brown, 4 cm long, 2.5–3 mm thick. Pl-cystidia scattered, ch-cystidia not so aggregated or almost destitute, fusiform or clavate, thin-walled, with blunt apex, hyaline, $50-70 \times 12-16 \mu$. Basidia 4-sterigmate, $24-26 \times 6-7 \mu$. Spores elongate, angular, with inconspicuous nodules, pale ochraceous, $6-8 \times 4-5 \mu$.

Nom. Jap. Asetake-modoki

Hab. Mt. Bukô, Titibu (Sept. 30, 1950); Nagaone, Titibu (Simizu, Sept. 29, 1950).

The characteristics of this species are as follows: pileus dark brown, stipe pale brown with immarginate bulb, cystidia thin-walled. *In. castanea* and *In. Earleana* seem to have some resemblances to the present species.

34. *Inocybe titibuensis* Y. Kobayasi sp. nov.

Pileus expanso-campanulatus vel fere applanatus, 1.5–2.5 cm latus, frequenter radiatim fissilis griseobadius, centro densiore, raro areolatim fissilis, appresso-fibrillosus, in speciem glabrus, minute rimosus versus marginem; lamellae angustae adnexae vel fere liberae, confertae, griseo-badiae, acie fere integra. Stipes subaequalis vel sursum attenuatus, nitidus, pallide aurantius, basi bullatus, solidus vel fistulosus, 3–4 cm longus 4 mm crassus. Pl-cystidia sparsa gregaria turbinata vel fusiformia crassiparietalia, hyalina; ch-cystidia fasciculata, breviora quam pl-cystidia. Basidia 2 vel 4 sterigmata $23-27 \times 7 \mu$. Sporae oblongo-polyhedrae, distincte verrucosae $7-10 \times 5-7 \mu$.

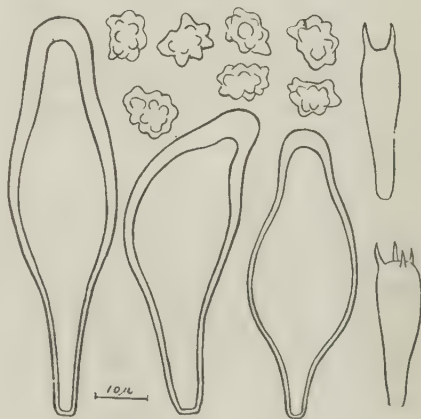


Fig. 65. *I. titibuensis*
Pleurocystidia, basidia and spores

(An+) No. 28, 31. Pileus expanded-campanulate or almost plane, 1.5–2.5 cm broad, often split; surface dry, grayish-brown, the middle-part darker, sometimes areolately cracked, appressed fibrillose, seemingly glabrous, minutely rimose toward the margin; lamellae narrow, adnexed or almost free, close grayish brown, edges almost entire. Stipe subequal or tapering upward, glossy, pale orange-pinkish, with the distinctly emarginate bulb, stuffed to hollow, 3–4 cm long, 4 mm thick. Pl-cystidia scattered or gregarious turbinate or fusiform, thick-walled, incrassate hyaline; ch-cystidia fasciculate, somewhat shorter than the normal pl-cystidia. Basidia 2 or 4 sterigmate, $23\text{--}27 \times 7 \mu$. Spores angular oblong, distinctly verrucose, $7\text{--}10 \times 5\text{--}7 \mu$.

Hab. Mt. Bukô, Titibu (Jul. 16, 17, 1950, Sept. 1950).

This species resembles *In. asterospora* in emarginate bulb at the base of stipe and distinctly nodulose spores.

35. *Inocybe nikkoensis* Y. Kobayasi sp. nov.

Pileus primo convexus, maturitate expansus, applanatus, radiatim rimosus, 1.5–2.5 cm latus, appresso-fibrillosus, purpureo-glaucus, dein saturato-glaucus, centro plus minusve squarrosus, obscurior; lamellae adnexae ochraceae confertae ventricosae, acie fere integra, non farinacea. Stipes sursum attenuatus fistulosus, basi bullatus, pallide purpureo-glaucus, sericeus, sursum farinaceus 2.5–3 cm longus 2–3 mm crassus. Pl-cystidia sparsa, plus minusve minima, fusiformia, crassiparietalia, hyalina, $40\text{--}50 \times 10\text{--}12 \mu$; ch-cystidia fere nulla. Basidia 4-sterigmata. Sporae rectangulares, pedicellatae, minute verrucosae, $6.5\text{--}8 \times 4.5\text{--}5.5 \mu$.

(An+) No. 21. Pileus convex, expanded almost plane, radially split, 1.5–2.5 cm broad; surface appressed-fibrillose, dark purplish then dark grayish, the central part somewhat squarrose, dark coloured; lamellae adnexed, ochraceous, close, ventricose, edges almost entire, not farinaceous. Stipe somewhat attenuate upward, hollow, the base bullate, pale purplish-gray, silky glossy, upper part slightly farinaceous, 2.5–3 cm long, 2–3 mm thick. Pl-cystidia scattered, comparatively small, fusiform, thick-walled, hyaline, $40\text{--}50 \times 10\text{--}12 \mu$. Ch-cystidia almost none. Basidia 4-

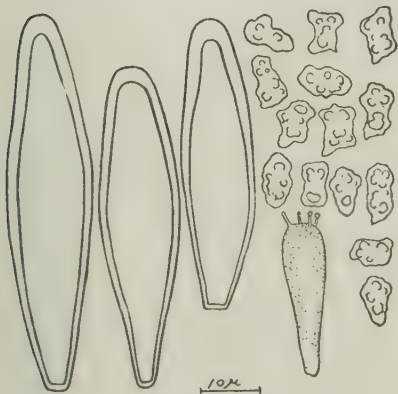


Fig. 66. *I. nikkoensis*
Pl-cystidia, basidium and spores

sterigmate. Spores rectangular with distinct pedicel, minutely verrucose, $6.5-8 \times 4.5-5.5 \mu$.

Hab. Tamoza, Nikko (Oct. 30, 1949)

This can be separated from *In. umbrina* by the squarrose central part of pileus. *In. nigrescens* of America has some resemblances to this, differing, however, by smaller spores.

36. *Inocybe asterospora* Quél.

in Bull. Soc. Bot. Fr. XXVI: 50 (1879); Sacc. F.J.C. p. 732; Massée, Monogr. gen. *Inocybe* p. 465 (1904); Kauffm. N.A.F. p. 233; K. et M.I.S.F. pl. 105 (1929); Heim, In. p. 372 pl. 34 fig. 1; Lange, F.A.D. p. 84 pl. 117 G. Syn. *Astrosporina asterospora* Rea, B.B. p. 210. *Clypeus subrimosus* Karst. Symb. Myc. Fenn. XXVIII: 38 (1888) (non *Agaricus subrimosus* Cooke ill.).

(An+) No. 48. Pileus large expanded, 4.5-6.5 cm broad, radially rimose, margin straight or undulate or reflexed; surface dry, dark brown, fibrillose, finely scaly, denser and darker at the center; lamellae moderately close, broad, pale grayish-brown, adnexed or free, edges

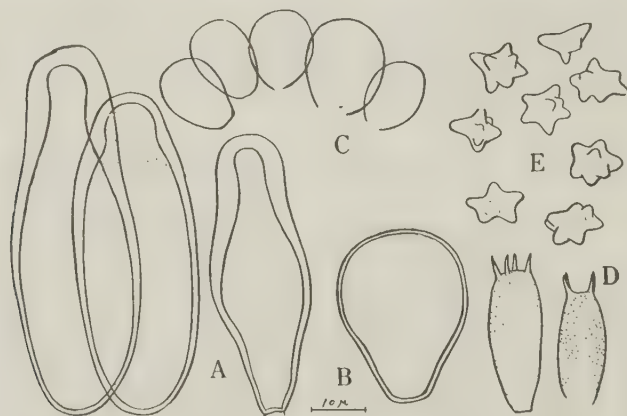


Fig. 67. *I. asterospora* Pleurocystidia (A, B), sterile cells on gill-edge (C), basidia (D) and spores (E)

finely serrate or entire. Stipe equal except the bulbillate base, solid, silky, white or pale ochraceous, farinaceous, 5-6 cm long, 5-8 mm thick. Pl-cystidia scattered, thick fusiform or ventricose or vesiculose, thick-walled, especially at the upper part, hyaline $42-54 \times 16-20 \mu$. Ch-cystidia mingled with vesiculous thin-walled cells, fasciculate. Basidia small, 4-sterigmate. Spores polyhedral or elliptic in outline,

conspicuously nodulose, nodules being obconic, pale grayish brown, $7-8.5 \times 6.5-7 \mu$.

Nom. Jap. Kabura-asetake (nov.) Seitaka-asetake (Imazeki in Sched.).

Hab. Komazawa, Tokyo (Misao Mori Oct. 5, 1937); Senkawa (Aug. 21, 1950).

37. *Inocybe nodulospora* Y. Kobayasi sp. nov.

Pileus expanso-umbonatus, 1.5–2 cm latus, glauco-umbrinus, centro obscurior, innato-fibrillosus; lamellae adnexae, inaequales plus minusve remotae, fuliginosae. Stipes elongatus solidus, aequalis, basi bulbosus fibrillosus, glauco-umbrinus, 4.5 cm longus 2–2.5 mm crassus. Pl-cystidia sparsa vel aggregata, ventricoso-fusiformia, pallide umbrina, tenuiparietalia, $56-76 \times 18-25 \mu$. Cellulae steriles acierum fascicu-

latae, vesiculosae. Basidia magna, 4-sterigmata. Sporae globosae vel ellipsoideae, conspicue nodulosae, $7-11 \times 6-8.5 \mu$, ochraceae, nodulis conicis subacutis.

(An+) No. 56, 70.

Pileus expanded-umbonate, 1.5–2 cm broad; surface glaucous brown, denser at umbo, innately fibrillose; lamellae adnexed, unequal, somewhat distant, dark brown. Stipe long, stuffed, equal, except the bulbous base, innate silky, fibrillose, same coloured with pileus,

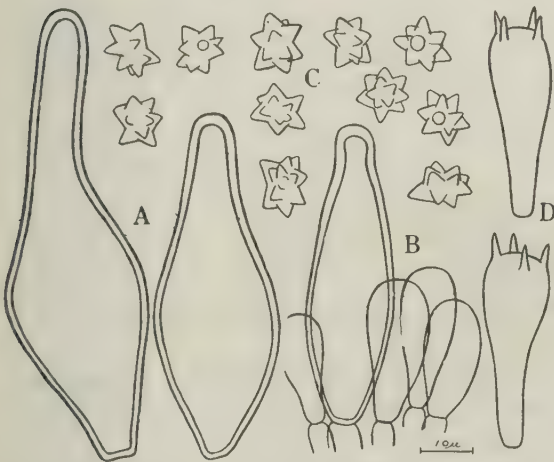


Fig. 68. *I. nodulospora* Pleurocystidia (A), a part of gill-edge (B), spores (C) and basidia (D)

4.5 cm long, 2–2.5 mm thick, trama composed of multiseptate hyphae. Pl-cystidia scattered or close ventricose-fusiform, pale brown, somewhat thin-walled, $56-76 \times 18-25 \mu$; sterile cells on ridges close fasciculate, vesiculose, mingled with ch-cystidia. Basidia large 4-sterigmate. Spores globose or ellipsoid in outline, $7-11 \times 6-8.5 \mu$, conspicuously nodulose, nodules being obconic, subacute, up to 2.5μ high, ochraceous.

Hab. Nagaone, Titibu (Simizu, Oct. 13, 1950–no. 56), Kinsenzi (Simizu, Nov. 4, 1950–no. 70).

This is near *In. intricata* of North America, which can be separated by the adnate lamellae, obtuse nodules of spores and thick-walled cystidia,

38. *Inocybe calospora* Quél. forma *minor* Y. Kobayasi f. nov.

A typo differt fructificatione minore et cystidiis brevioribus.

(Sp+) No. 40, 35. Pileus minute, conic-expanded, umbonate, thin, 4-8 mm broad, margin straight or incurved; surface dry, violaceous brown or pale brown, closely covered with dark violaceous brown or dark brown squarrose scales, especially the umbo darker and closely covered by scales; lamellae adnexed, unequal, subdistant, at first greenish yellow, then brownish, edges paler, fimbriate. Stipe firm, fibrillose, equal, slender, stuffed, pale violaceous brown, glabrous or pruinose in the upper part, 15-25 mm long, 1 mm thick. Pl-cystidia scattered, fusiform, moderately thick-walled, hyaline or pale violaceous, $27-37 \times 10-12 \mu$; ch-cystidia same with pl-cystidia, mingled with vesiculous, thin-walled fasciculate cells, some of these cells being elongated, $30-35 \mu$ long, containing pale violaceous plasma. Basidia 2 or 4-sterigmate, $15 \times 6 \mu$. Spores ellipsoid, ochraceous, 1-guttulate, conspicuously spiny, $7-7.5 \times 6-7 \mu$, or $10-12 \times 8.5-9.5 \mu$ including spines, spines being broader at the base, obtuse at the apex.

Nom. Jap. Hariasetake (nov.) Togemino-asetake (Imazeki in Sched.)

Hab. Senkawa (Aug. 16, 1950) Kamakura (T. Momiyama, Jun. 7, 1930), Ikebukuro, Tokyo (Imazeki, Oct. 22, 1936). This form can be separated from typical species by the following characteristics.

Typical species.... Pileus 1-2 (-3) cm broad

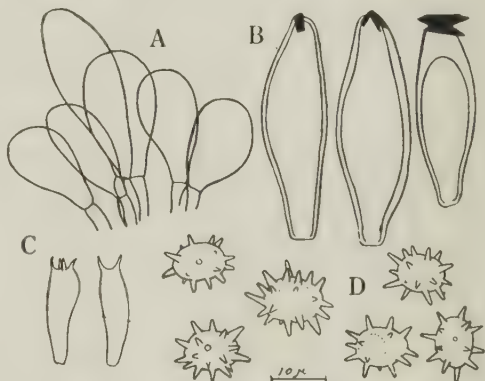
Cystidia $40-55 \times 8-12 \mu$ (by Kauffm.)Forma *minor* Pileus 4-8 mm broadCystidia $27-37 \times 10-12 \mu$ 

Fig. 69. *I. calospora* A part of gill-edge (A), pleurocystidia (B), basidia (C) and spores (D)

Explanation of coloured Plate

A. *Inocybe fastigiata* B. *Inocybe senkawaensis* C. *Inocybe maculata* D. *Inocybe umbratica* E. *Inocybe aureostipes* F. *Inocybe putilla* G. *Inocybe calospora* H. *Inocybe lutea* I. *Inocybe inaensis* J. *Inocybe umbrinella* f. *pallidula* K. *Inocybe nodulospora* L. *Inocybe sphaerospora* M. *Inocybe neomicrospora* N. *Inocybe grophylla* O. *Inocybe grophylla* f. *squamosa* P. *Inocybe cincinnata* Q. *Inocybe lilacina* R. *Inocybe lilacina* f. *violacea* S. *Inocybe rimosa* T. *Inocybe microspora* U. *Inocybe avellanea*



M



P



N



O



Q



F



S



T



U



あとがき アセタケ属の菌は世界に 100~150 種程知られて居り、主として温帯地方の林中、地上に發生し、多くのものは菌根形成菌のようで、培養は中々困難である。子實體は中型或は小型で暗い色のものが多いから、極めて普通に見出されるにも拘らず、雑菌として見逃されて居る現状である。多くの種類にムスカリン系の毒分を含み中毒の實例もある。外部形態に於ても、顯微鏡的特徴に於ても、本属はユニークな存在であるから、これの地域的モノグラフをつくるべく努力した學者は割合に多いが、兩方面の特徴の間に完全な相關関係を見出すことは仲々困難である。歐洲に於ては既に 1904 年に Massee のモノグラフ的研究があつて、この方面の分類に一新紀元を劃した。次いで Heim (1931) は約 80 種、Lange (1938) は 53 種をそれぞれのモノグラフ中に取扱い、一應歐洲産のものは整理が終つた観がある。一方北米では Kauffmann (1924) が 105 種を取扱つているが、近頃 Smith (1936, 1939), Smith & Stuntz (1950) が從來の研究結果の再検討をなし、同時に顯微鏡的特徴を重視して限られた地域より續々と新しい種類を出しているところを見ると、本属には形態の變異が相當に多いのではないかと疑も起る。我國では從來アセタケ (*I. rimosa*) が著名で、我國に於ける本属の代表者の観があるが、しかし實際は、本種は歐米に於けると同様に我國でもそれ程普通の種類ではなく、秋の終り頃限られた山地に發生する。今井 (1938) は北海道の褶菌類調査に當つて本属中に 6 種を挙げた。即ち *I. rimosa*, *I. geophylla*, *I. lacera*, *I. umbratica*, *I. praetervisa*, *I. plumosa* である。その頃、別に我國に於て本属の菌の毒成分であるムスカリンの調査が東大及び武田製薬で行はれたが、材料の同定を今關が行ひ *I. Bongardii*, *I. calospora*, *I. asterospora*, *I. Cookei* の存在を認めている。余は 1948 年以來、從來の研究のデータを整理し、國內各地方の低地から高山地帯に亘つて百箇處以上より資料を蒐集し、ここに 38 種、1 變種、2 品種を認め得た。併しなほ未解決の標本が多數ある。

格 啓 介：蚊取線香から分離されたアスペルギルス・フミガーツスの 1 株に就て K. Tubaki: Osmophilic strain of *Aspergillus fumigatus* isolated from mosquito incense stick

蚊取線香は特殊成分として Pyrethrin を含むものであるが、夫より主として *Aspergillus* を分離した所、その一つ *Asp. fumigatus* と同定し得る株に新しい培養上の性質が認められたので茲に略記する。材料は市販の蚊取線香を用いた。分離した株は次のように大別された。

Aspergillus chevalieri (Mang.) Thom et Church; *Asp. amstelodami* (Mang.) Thom et Church. *Asp. ruber* (Spieck. et Brem.) Thom et Church; *Asp. fumigatus* Fr. 以上の中、前の 3 者は總て Osmophile であつて食鹽濃度 10~15% の malt agar に發育良好で、高濃度の有機物、即ち乾物、皮具等から分離されるものに屢々見られる系統の *Asp. glaucus* group の菌であるが、*Asp. fumigatus* には未だ Osmophilic としての記載を見ない。

最後の株 *Asp. fumigatus* Fr. (NI. 5551) は廣く分布する *Asp. fumigatus* のうちで高滲透壓に耐へる性質を得た株と思はれ、普通の malt-agar, Czapek agar には發育極めて不良であるが、10% 食鹽を加へた同培地には速に發育し、普通の *Asp. fumigatus* と同様の菌叢を示す。亦、被子器は形成せず、20% 食鹽加培地には發育微弱である。此の結果より *Asp. fumigatus* group にも *Asp. glaucus* group と同様の Osmophile が存在する事が認められる。

尚、全分離株に就き、除虫菊粉末を 0.1% 加へた Czapek agar で培養した結果、對照區と差別なく、此等は單に Osmophilic の性質の爲、着生して居たものと思はれる。

菌核形成菌類の研究*

小林 義 雄

Yosio KOBAYASI: Studies on the Sclerotia-forming Fungi

菌核形成菌類は子囊菌類の Aspergillaceae, Clavicipitaceae, Sclerotiniaceae, Geoglossaceae, Dermateaceae, 擔子菌類の Clavariaceae, Corticiaceae, Polyporaceae, Tricholomataceae, Coprinaceae, 不完全菌類の Stilbellaceae, Mycelia Sterilia 等に廣く分布し、それらの形態的研究は非常に多くなされ、生理、生態的意義も各個に色々と論ぜられて居る。Whetzel (1945) は菌核菌科を設けるに當り、この科の種類の菌核を種々の群に分類して居るが、廣く菌核形成菌類を見渡すと、なほ複雑な新しい型が加へられるようである。これらを純粹分離して見ると、今迄試みられた種では試験管中で容易に菌核を形成し、或は子實體層や分生子を見られるものが多い。本研究は出來得る限り多くの種類を順次に純粹培養し、形成される菌核が自生状態で見られるものと如何なる異同があるか、又それらが如何なる分類學的の價值を有するかを見極めることを以て目的とする。此研究を遂行するに當つてなされた椿啓介學士の協力に感謝する。

1. *Collybia cirrhata* Schum. var. *cookei* Bres. Icon. Myc. V: 206 pl. 206 (1928) Syn. ? *Marasmius sclerotipes* Bres. Fung. Trid. pl. 2 fig. 1 (1881); Sacc. Syll. Fung. V: 558 (1887); Rea, Brit.-Bas. p. 528 (1922). *Agaricus (Collybia) cirrhatus* Fr. sensu Cooke, Ill. Brit. Fung. pl. 144 (1883). *Collybia cirrhata* Fr. sensu Lange, Flora Agar. Dan. II: 15 pl. 44 E (1936)

材料 山形縣、釜淵の潤葉樹根元 (26 Sept. 1951), 及び尾瀬原—三條瀧道上 (1 Oct. 1950) に採る。

子實體 傘は小形の丸山形で徑 5-9 耗。中央は微凸、傘肉は薄く、表面平滑、無光澤、中央部は淡紅褐色、周縁に向つて次第に淡色となり殆んど白色となる、縁邊は全縁で薄質。褶は密生、不等、直生、淡紅白色又は類白色、全縁。柄は瘡長線狀、上下同徑、長さ 4-7 厘、徑 0.8—1 耗、淡紅白色又は淡褐色、粉質、中央以下に根毛あり、下端に一個の菌核を具へ基物中に埋る。トラマは絲狀細胞よりなり、褶縁には特別のシスチジアなし。擔子基には棍棒狀、梗は 4 本、稀に 2 本、 $15-20 \times 3.5-4 \mu$ 。胞子は卵狀又は亞球狀、平滑

研究材料採集費の一部は尾瀬原總合學術調査費による。

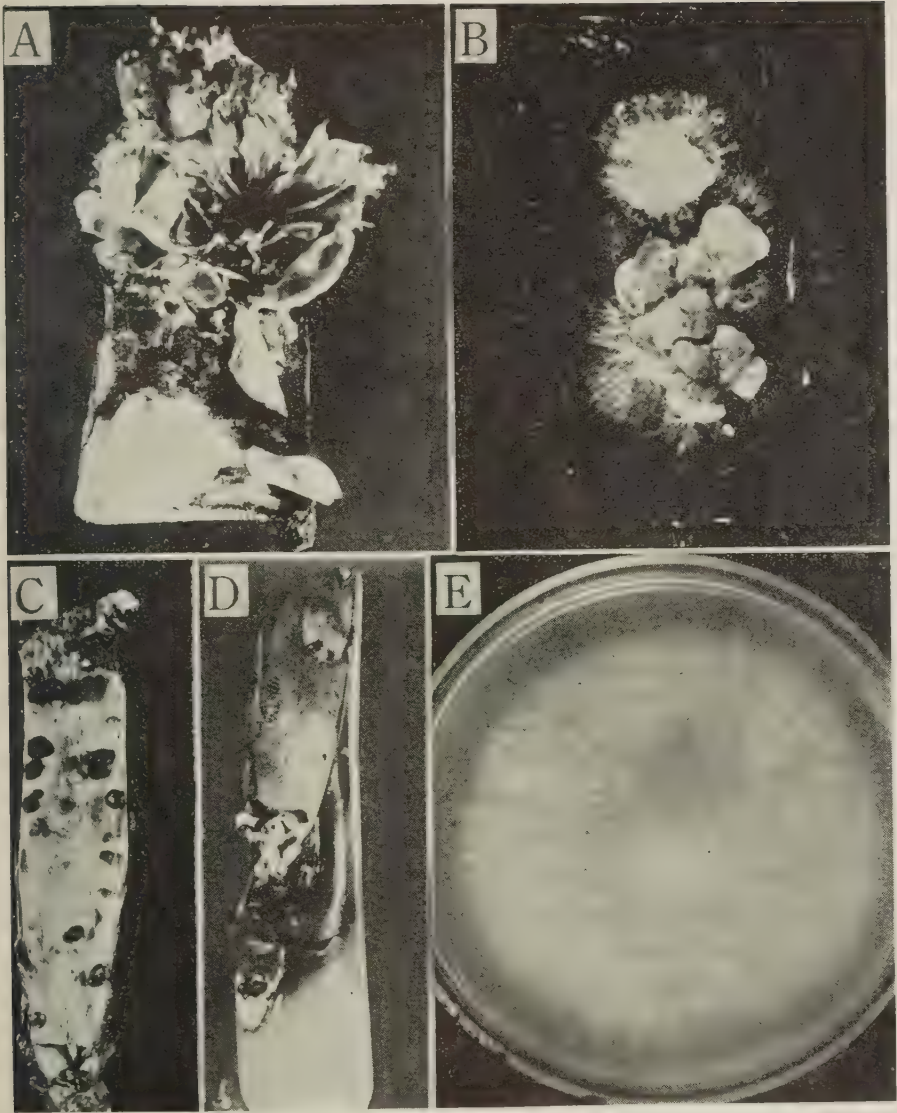


Fig.70 A. *Poria cocos* $\times 2$ B. *Collybia cirrhata* var. *cooki* $\times 2.3$ C. *Corticium centrifugum* $\times 7/6$ D. *Sclerotinia sclerotiorum* $\times 4/3$ E. *Trichocoma paradoxa* $\times 7/8$

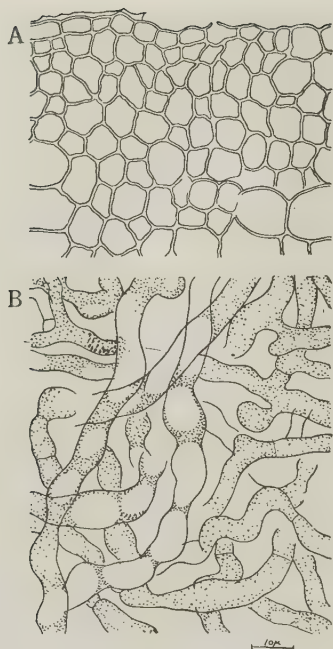


Fig. 71. Sections of sclerotium of *Collybia cirrhata* var. *cooksi* A. Peripheral part B. Inner tissue

無色， $3-4 \times 2.5\mu$ ，

菌核 自生状態の菌核は小形，球状又は腎臓状，単立，徑 $4-5\mu$ ，表面は少しく凹突があるが略平滑，淡黄褐色。

培養所見 麥芽汁寒天斜面培養基上に1952年8月27日接種，室温に保てば，數日にして菌絲は延びはじめ，一週間後には菌核形成が見られ，9月15日の所見では數個の菌核が完成せられた。菌絲叢は發育やや遅く，純白，はじめ立毛状，次第に薄く基物上に擴り，ややクモ巢状，次第に表面が粉質となる。菌絲は分枝多く，隔壁も極めて多く，無色，薄膜で，嚙狀突起顯著，徑 $2.5-3\mu$ 。菌核は基物面の菌絲上に密着，肉質，單



Fig. 72. Basidia and spores of *Collybia cirrhata* var. *cooksi*

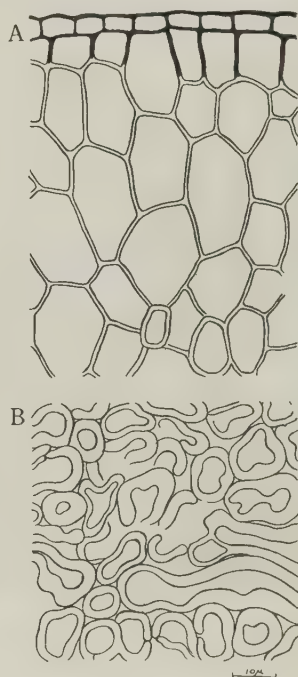


Fig. 73. Sections of sclerotium of *Corticium centrifugum* A. Peripheral part B. Inner tissue

立、或は數個宛集り生じ、始め少しくクリーム色、後に極めて淡い黄褐色 (Light Ochraceous-Buff—Warm Buff) となり、表面平滑又は少しく粉質、菌絲がまつはり着くことがある、球狀、又は塊狀、徑 2—4 耗、特別の皮層は形成せられない。周縁部は偽柔組織よりなり、各細胞は球狀又は多角形、略等徑、薄膜で密生し、表面 1—2 層のみが淡褐色を帯びる。内部に至るに随ひ、次第に太い菌絲組織に移行する。各菌絲は無色、薄膜、多くもつれ合ひ、分枝、隔壁が多く、内容充實しているものもある、太さ 3.5—7 μ 。

本變種は日本未記録である。他のキノコ類の子實體上に寄生して菌核を形成せぬ *Collybia cirrhata* と同一物とし、變種を認めない學者もある。若しこの二者の子實體の状況が全く同一で、菌核の有無と生態のみが異なるものであるとすれば、又新しい問題が起る。兩者を別々に單孢子培養し、交配試験をする必要もある。なほ本屬には菌核形成種として *Chllybia tuberosa* Bull. がある。歐、北米に知られ、菌核は他のベニタケ、チダケ、ハリタケ屬、多孔菌類等の子實體上に形成せられ、稍大形で梨形又は分岐し、紫褐色又は黄褐色である。恐らく菌核の構造は兩者似たものであろう。

2. *Corticium centrifugum* Bres. in Ann. Mycol. I: 96 (1903)

我國の植物病理學者間に煙草、甜菜、瓜類、馬鈴薯等の白絹病菌として *Hypochnus centrifugus* (Lév.) Tul. の名を以て知られて居る菌である。

Rogers (in Farlowia I: 286—288 (1943)) によればこの學名のタイプである *Rhizoctonia centrifuga* Lév. も *Hypochnus centrifugus* sensu Tul. もここで問題にしている菌とは別物であるという。彼は更に別の論文 (l.c.p. 95—118) で、*Pellicularia* Cook. (*Botryobasidium* Donk) を起用して、ここで問題にしている種に近縁の *Pellicularia vaga* (Berk. et Curt.) Rogers (*Corticium vagum*) や *P. filamentosa* (Pat.) Rogers (*Hypochnus Solani* Prill. et Del) 等を記載している。*Corticium* を廣義に解釋すれば *Pellicularia* はその一節となる。しかし *Corticium centrifugum* は “untenable” な學名であるという。然らば問題の菌は如何なる學名で呼ぶべきか。Rogers によれば將來 *Corticium pezizoideum* Ellis et Everh. 或は *C. arachnoideum* Berk. に落付くであらうと記しているが、此處では一應従來通り、上記の名を用ひて置く。

材料 東邦大學内で栽培のハツカクレン (*Podophyllum pleianthum*) の根、莖上に生じたものを久内清孝氏より入手 (Oct. 1951)。

培養所見 菌核組織の一部を採り麥芽汁寒天培養基上に培養する。菌絲の生長は極めて速で忽ち培養基の表面を蔽ひ、更に硝子壁に沿つて上昇する。菌絲叢は白色、絹光澤ある膜狀をなし、各菌絲は密に織られ、無色、薄膜、隔壁多く、嘴狀突起を欠き、分枝する。徑 2.5—5 μ 。擔子基は出来ない。

菌核は菌絲層表面に形成せられ群立し、はじめ菌絲により下半部が取巻かれているが、後に殆んど裸出し、硝子壁に沿ひ上昇する菌絲上にも生じ空間に浮んで居る如き觀かあ

る、球状又は塊状長形、径 1.5~3 耗、稀に径 6 耗位に及ぶ、表面は少しく凹突があるが、略平滑で、光澤があり、紫褐色、褐色、暗褐色等で相當にかたい。内部組織は周縁部は偽組織よりなり、やや大形の多角形の細胞よりなり、その表面の 1~2 層が褐色を帯びて皮層を形成する。内部は球形、或は不規則の厚膜細胞よりなり、長形の菌絲狀細胞を混じ、組織全体として無色、弾力に富む。

3 *Poria cocos* Wolf in Journ. Elisha Mitchell Sc. Soc. XXXVIII: 127~137 (1922); Weber in Mycologia XXI: 113~130 (1929). Stat. conid. *Pachyma hoelen* Rumph. Herb. Amb. XI: 123 (1755). [*Sclerotium cocos* Schivein. Syn. Fung. Carol. Sup. p. 30~31 (1822). *Pachyma cocos* (Schw.) Fr. Syst. Myc. II: 242~243 (1823) et Summ. Veg. Scand. II: 242 et III: 223 (1849); Tul. Hypog. p. 197 (1851)].

北米産で久しく *Pachyma cocos* 又は俗に tuckahoe と云はれて居つた菌核は松、

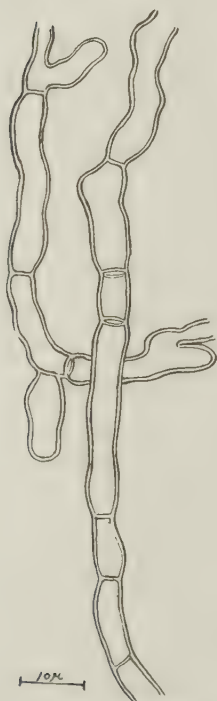


Fig. 74. Hyphae of *Corticium centrifugum*

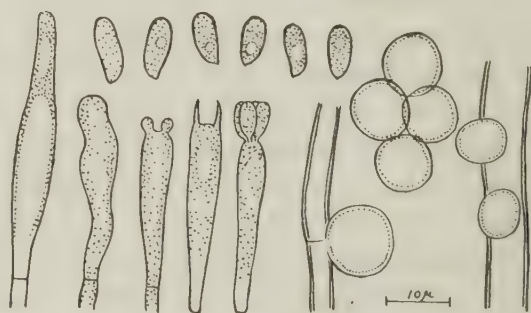


Fig. 75. *Poria cocos* Basidia, spores, hyphae and gemmae

モミ、其他の針葉樹、*Magnolia*, *Citrus*, *Quercus*, *Eucalyptus* 等の潤葉樹の根に寄生し、砂地に多い大形のもので、Wolf が 1922 年に始めてこの菌核体の表面に背着生の子實體を生ぜしむることに成功し *Poria* 屬に編入し、1929 年には Weber が菌核の組織の一部を採り、純粹培養し、培養基上に自然状態と同じ *Poria* 型の子實體をつくらすことか出来た。なほ彼によればこの分布はカナダ、タスマニア、オーストラリア等に及んでいる。

他方東洋で茯苓(支那音で Fuh-ling, 訛ると Hölen)と稱し、漢藥に供している菌は

久敷い間、ランフィウスのアンボイナ植物誌に載つて居る *Pachyma Hoelen* の學名か用ひられて居つたが、支那では 1933 年に載芳瀾及び魏景超 (in *Sinensia* V no. 5: 121~122 fig. 51) がこの菌核体上に子實體を見出し、次で日本産のものについては日野巖 (植物研究雜誌 XIII: 672~674 (1937)) 及び橋本亮 (同誌 XIII: 824~829) がそれぞれ菌核体を適当な環境下に保つことにより子實體を生ぜしめ、その結果東洋産の茯苓は北米産の *Pachyma cocos* と同一種なりと斷定したのである。斯く結論せられたからには北米産も東洋産と同様に漢藥としての効があるべきであり、純粹培養の結果も同一の子實體が形成せられるべき筈である。處が次に記す如き意外の結果が起つた。因みに野外で形成せられる菌核の構造に關しては朝比奈泰彦 (植物研究雜誌 X: 778~783 (1934)) の論文があり、今はこれに附加すべき新事實もない。

材料 1852 年春、東京都内、仙川の津村藥草園内赤松根に寄生して居つた茯苓と鑑定せられるものを佐々木一郎氏より分與せらる。

培養所見 菌核内部の白色組織の一片を麥芽汁寒天培養基に植えた。夏日の室温で植えかへ後 2 週間位で子實體の形成を見る。菌絲は初め白色綿毛狀、培養基の全表面を厚く蔽ひ、次第に褐色絨毛狀となる。菌絲は太さ $2.5\sim 6\mu$ 無色、薄膜、嘴狀突起を欠き、隔壁あり、分枝する。膜狀に不定形物を多量に分泌することがある。菌絲上にゲンマ狀の球狀細胞を形成する。無色、薄膜で徑 $8\sim 11\mu$ ある。子實體は葉狀或は扇狀に擴りて直出し數個宛集り束狀をなす。高さ $1\sim 1.5$ 梗、幅 $5\sim 8$ 耗、厚さ 1 耗足らず、上縁は次第に薄くなり細かく裂ける。質は薄いため膜狀をなすが、相當に丈夫で、むしろ革質と云うてよい。兩面ともに少しく縦皺があるが、略無毛、平滑、無光澤、類白色、後に少しく黄褐色となる。基部は短柄狀をなす。子實體は兩面に發達する。但し側絲狀の細胞が多く、棍棒狀、紡錘形又は圓筒狀で徑 5μ 位、擔子基は 4 梗 (稀に 2) を具ふ。胞子は長楕圓体又は圓筒狀、不等側、基部に突起あり、無色、平滑、太さ $7\sim 9\times 3\sim 3.5\mu$ 、 1 個の油滴を具へていることが多い。トラマは菌絲層よりなり、その菌絲は太さ $3.5\sim 4\mu$ 隔壁多く密に織られる。

この子實體の形より考へると *Poria* とは大分遠縁となり *Phyllacteria* 屬の型である。又 *Sparassis* に近縁と考へてもよい。勿論試験管内の子實體はアブノーマルなものの場合が多いから、これによつて結論を下すことは出来ないが Weber の場合とは大分異なる。しかし胞子は全く同一である。この子實體の相異は如何にして出来たか。或は日本産の實驗に供した材料が北米の *Poria cocos* とは異なるものとも考へられる。我國のものがすべて赤松に寄生するに對し北米のものが種々な闊葉樹につく事も注意すべきである。なほ各地よりの材料について同一の培養實驗を續行中である。

4. *Sclerotinia sclerotiorum* (Lib.) de Bary, Vergl. Morph. Biol. der Pilze p. 32, 56, 237 (1884); Masee, Brit. Fungus-Flora IV: 280 (1895); Whetzel, in Mycologia XXXVII: 664 fig. 1 (1945). Syn. *Peziza sclerotiorum* Libert, Crypt. Ard. no. 326 (); Bref. Unters. IV:



Fig. 76 Paraphysis, asci and spores of *Sclerotinia sclerotiorum*

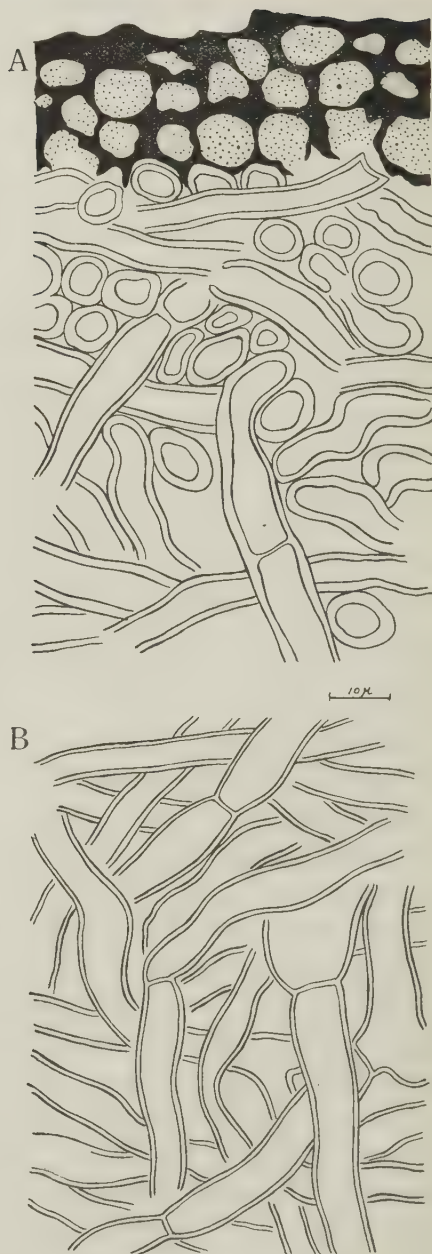


Fig. 77 Sections of sclerotium of *S. sclerotiorum*
A. Peripheral part B. Inner tissue

112~121 pl. VIII, IX (1881). *Hymenoscypha sclerotiorum* (Lib.) Phillips, Manual. Brit. Disc. p. 115 (1893).

材料 1952 年 5 月 23 日尾瀬原, 中田代の沼尻川原にて腐植土上に子實體の生じて居るのを多数採る。寄主は不明。

子實體 子囊盤は漏斗形で後に一層開き, 径 $1.5 \sim 2$ ㎝, 縁部は全縁, 遂には反捲する, 内面は平滑又は皺があり, 淡黄褐色 (Pinkish Buff), 又は暗紫褐色 (Fawn Color), 外面は同色又は少々淡く, 極めて細かい毛を密生しピロード状をなす。柄は地下にある一箇の菌核より一本宛生じ, 捩れ, 不規則に屈曲し, 丈夫で長さ $5 \sim 7$ ㎝, 太さ $2 \sim 3$ ㎜, 紫黑色又は暗紫褐色である。子囊は 長さ $150 \sim 160 \times 7 \sim 10 \mu$, 先端は頭状, Jod -, 8 箇の胞子が一列に並ぶ。子囊胞子は楕圓体状又は短紡錘形, 時には不等側, 單細胞, 無色, 平滑, 不明瞭に 2 箇の油滴が見られる, 長さ $8 \sim 15 \times 4.5 \sim 5 \mu$, 側糸は子囊より超出せず, 上子實體層を形成せず, 單一又は分岐し絲状, 太さ $1.5 \sim 2 \mu$, 隔壁があり, 無色, 先端は著しく膨大せず。胞子は容易に發芽し, 短い分生子梗となり, その先に一箇宛の分生子を生ず。分生子は球状, 莖部に短突起がある, 無色, 径 $2.5 \sim 3 \mu$, 1 箇の油胞がある。

菌核 塊状又は長く延び, 表面はやや凹突著しく, 黑色, 弾力ある肉質, 径 $1 \sim 2$ ㎝, 皮層は數層の細胞層よりなり厚さ $35 \sim 40 \mu$, 黑色又は暗鼠色, 細胞内に暗色の内容がある。内部組織は不規則に織られた菌絲よりなり, 菌絲は不規則に分枝し, 隔壁あり, 径 $6 \sim 12 \mu$, 無色, 厚膜或は薄膜のも混じている。

培養所見 菌核の一部をとり麥芽汁寒天培養基上に分離する。1952 年 8 月 12 日に植え室温に保ち 10 月 6 日の状態では, 菌絲は平に擴り, 横臥し, 立つもの少く, 灰褐色, ランヤ状をなし, 上面に分生子

を一面に生ずる頃灰白色となる。裏面は黒褐色又は殆んど黑色となる。次いで菌絲叢の表面に黑色塊状徑 $5 \sim 10$ ㎜位の菌核を生ずる。菌絲は始め細く無色, 後に稍厚膜となり径 $6 \sim 9 \mu$, 隔壁比較的多く, まばらに分枝し, 淡灰褐色, 内容少し, 分生子を生ずる菌絲は殆ど白色, その先端に多くの細胞を分出し, 更に分れて各先端の細胞が分生子梗となる。徳利形で, 長さ $7 \sim 10 \times 3 \mu$, 先端に一箇の分生子を生ずる, 分生子は胞子の上に生ずるものと同一である。菌核の構造は呼外のものと全く同じ。但し子實體を生ずるに至らない。

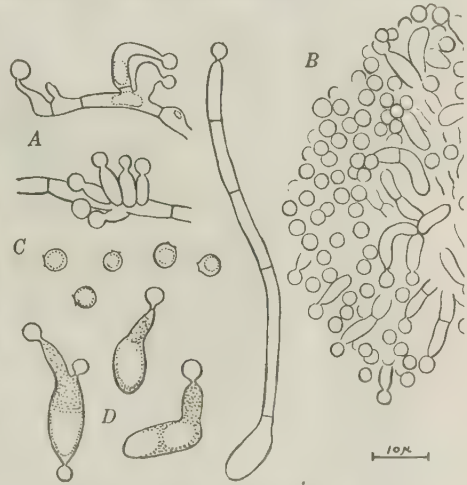


Fig. 78 *Sclerotinia sclerotiorum* A. Conidia-producing hyphae B. Conidial cluster C. Conidia D. Conidia on sprouting ascospores

ヒメマリモに寄生する *Lagenidium* 属菌について

大久保 眞理子

本年春青森縣下北郡田名部町の中島全二氏より同縣同郡の左京沼にて採集されたヒメマリモを國立科學博物館の小林義雄先生の元へ送られて來た。これを水槽中に入れ飼育している内に6月末頃植物体の先端のみが白くなつてゐる事を發見した。これを檢鏡した結果細胞中に卵胞子らしいものが見られたが7月末になつて游走子嚢及菌糸等が見ら

Fig. 79. *Lagenidium* sp.

- A. ヒメマリモ細胞間の菌糸，藏卵器，藏精器，游走子嚢
- B. 一次游走子の回轉運動
- C. 游走子嚢，一次游走子及び二次游走子
- D. 藏卵器及び藏精器

れ、ここで初めて *Lagenidium* 属である事が判明した。なほ本種の寄生する状態として興味ある事には必らずヒメマリモの先端若しくは二番目迄の細胞（この場合先端が必ず犯されている）のみで他の部分には寄生していない。この理由として先端は成長点であるために細胞膜もやわらかくその点入りこみやすいのだらうと思はれる。本種は定期的に發生する様で、先ず最も盛んに成長の行はれるのは5~7月迄の間で盛夏になり水温の上昇する事により一時休眠胞子を形成しそのまま夏を越し9月末~10月上旬になり再び發生をし10月下旬~11月中に再び休眠胞子を形成して越冬するものの様である。その發芽はまだ觀察されていない。今迄の觀察の結果では何れの既知種の記載にも適合しない。

Lagenidium sp. (Lagenidiaceae)

菌体はヒメマリモの細胞中に寄生し、管状又は糸状、徑4~7 μ 。隔壁を生じ不規則に分岐して寄生細胞中に擴がる。游走子嚢は5~7×30~50 μ にて寄主細胞膜下にふくらみを有し發射管を生ずるか又は稀にふくらみを有せず發射管のみを生ずる場合もある。

發射管は2×5~10 μ にして多くの場合寄生植物内にあるが極く稀に細胞中より外に出る場合もある。游走子は3~8個宛生じ2~3個の小油球を有する。發射管より出た一次游走子は被膜 (Vesicle) を形成し寄生細胞内にて成熟し迴轉運動をする。後そらまめ形、7×5 μ 、無色、鞭毛を二本有せる二次游走子となつて被膜を破り寄生細胞中より游出する。

雌雄同株にして藏卵器は頂生又は間生、20~22×17~20 μ 。卵胞子は一個宛生じ球形15~18 μ やや褐色、膜平滑2層膜の厚さ3~4 μ 。中心性又は亞中心性受精した後休眠胞子となり寄主細胞の崩壊により細胞外に出る。

備 考

この種類に類似したものに *Lagenidium Rabenhorstii* Zopf, *L. marchalianum* de Wildeman, *L. Closterii* de Wildeman の三種がある。*L. Rabenhorstii* と比較すると、本種は卵胞子の大きさ、游走子の大きさ及び菌糸の太さなどの點に於て非常によく似ているが、先ず菌糸の發達が非常によい點、寄主植物が接合藻類でない點、游走子嚢の發射管の大部分がヒメマリモの細胞中に於て袋状に擴がる點等に於て異なる。又 *L. marchalianum* とは、寄主植物も近縁屬で菌糸ののびのよい點等に於ても類似しているが寄主植物内にて成長した菌糸が次の細胞にのびる時細くくびれる事のない點、游走子嚢の發射管が寄主植物外に長くのびない點等が異つている。

L. Closterii は游走子嚢の發射管の嚢が寄主細胞内にて囊状にひろがる點及菌糸の發育のよい點等本種によく似ているが、しかし、發射管の長く延びる點、菌糸の細いこと、寄主植物が *Closterium* である點、雌雄異株である點、卵胞子、游走子等が小さい等で大分異つている。

これ等の事から見てどれにもあてはまる種類がなく、多分未記載の種類であらうと思はれるがなほ一層考察して結論を下そうと思つている。なほ本属は本邦未記録である。

A water-mould belonging to the genus *Lagenidium* was found in the apical cells of *Aegagropila* sp., a freshwater green alga, collected in a

pond of Aomori Prefecture of Honsyu. This seems near *Lagenidium Rabenhorstii*, *L. marchalianum* and *L. Closterii*, differing, however, in respect of host-relationship and several morphological characteristics.

オロチヨンの雪眼鏡 A Curious Fungus-Mask used by Orochon

北滿の大興安嶺にトナカイと共に狩獵生活をしているオロチヨン(鄂倫春)というツングース族の一派がある。白樺の樹皮やトナカイ、ノロ、ヘンダハン等の毛皮を利用して器用に色々な器具や衣装などをつくり、それらは獨特な味はひのある民藝品として知られている。大興安嶺は一年の半ば以上はガイガイたる雪に蔽はれ、殆ど白樺、落葉松、其他の落葉樹林であるから、雪を遮るものとはなく、小屋生活の焚火の煙と、晴天の日などの強烈な太陽の反射光で目を傷める者が多い。斯様な場合に對處するために工夫して作つたのが、ここに圖示するような雪眼鏡である。長さは大体額の幅位あり、彎曲して

居り、真中にスリットがある。つまりこのスリットを通して目に入る光の量を減少することが出来るのである。白色のゴム製品に如く弾力があり、顔面に當てて

もいたくない。極めて合理的なものである。扱てこの材料は何かと云うことであるが、嘗て滿洲の國立博物館に陳列してゐた一品を研究したことがあつたが、これは白樺類に寄生するカンバタケ (*Piptoporus betulinus* (Fr.) Karst.) で、子實體を剝したもののであることが判つた。その両端につけてある紐は皮製品であつた。つまりカンバタケの組織の白く弾力があり容易に加工出来る點を利用したのであつて、大興安嶺では容易に採集出来るものである。東大人類學教室にグリーンランドのエスキモーかと思はれる土人が作つた同種の雪眼鏡がある。前者に比して眼鏡の縦の幅が廣く、材料は流木らしい (小林義雄)

A curious mask illustrated above is used by Orochon, a race of Tungus, in Great Hsingan Range of Manchuria. This is not for masquerade, but for protecting the intense reflected light of snow. It was found that this is an exquisite utilization of white and elastic inner tissue of the fruitbody of *Piptoporus betulinus* (Fr.) Karst,

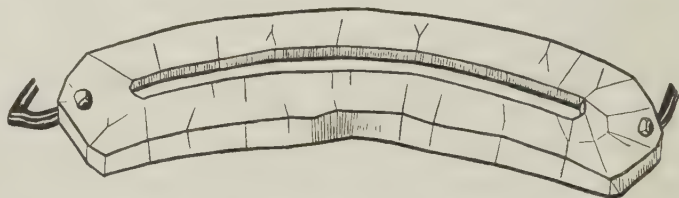


Fig. 80. オロチヨンの雪眼鏡

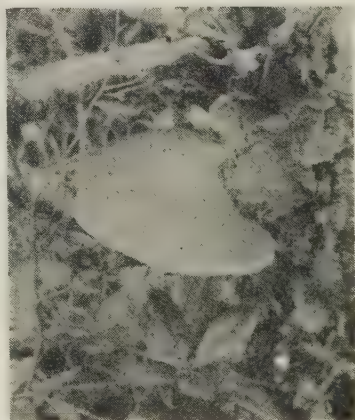


Fig. 81. 滿洲の山中(長白山)に自生するカンバタケ

An Additional List of Cultures, maintained in
The Japanese Type Culture Collection,
Nagao Institute, Kitashinagawa,
Tokyo

Supplement II
(June, 1952 — Nov., 1952)

- Acetobacter aceti* (Kützing) Beijerinck (Syn. *Bacterium aceti* Brown f. sp. *pruni-triflorae* Asai)
8101 ACTU (Iizuka) Strain Q-37 1952
- Agaricus silvicola* (Vitt.) Sacc. (Syn. *Psalliota silvicola* Roll.) Japanese name: Shiro-Morinokasa
3115 NI (Y. Kobayasi) From Nikko 1952
- Armillaria mucida* (Fr.) Quél. Japanese name: Numeri-tubatake
3116 NI (Y. Kobayasi & Tubaki) From Tanigawadake 1952
- Aspergillus fuscus* Schieman See *Aspergillus schiemanii* (Schiemann) Thom; *Aspergillus niger* van Tieghem mut. *schiemanii* (Schiemann) Thom and Raper
- Aspergillus niger* van Tieghem mut. *schiemanii* (Schiemann) Thom et Raper
Syn. *Aspergillus fuscus* Schiemann (Non Bonorden nor Amons)
5598 ACTU (Iizuka) Strain A-5-5; CLMR-55; CBS (Schiemann) 1952
- Bacterium aceti* Brown f.sp. *pruni-triflorae* Asai See *Acetobacter aceti* (Kützing) Beijerinck
- Bumilliera* sp.
A 013 TKTB (H. Ono) Strain A. 99 1952
- Chlamydomonas* spp.
A 007 TKTB (H. Ono) Strain 1 (A. 1) 1952
A 008 TKTB (A. Ono) Strain 2 (A. 24) 1952
A 009 TKTB (H. Ono) Strain 3 (A. 2) 1952
A 010 TKTB (H. Ono) Strain 9 (A. 8) 1952
A 011 TKTB (H. Ono) Strain 10 (A. 32) 1952
A 012 TKTB (H. Ono) Strain 15 (A. 13) 1952
- Chlorociboria aeruginosa* (Oeder) Seav. (Syn. *Chlorosplenium aeruginosum* Oeder) Japanese name: Rokushogusare-kin
2084 NI (Tubaki) From Mt. Ôtake 1952

- Chlorociboria versiformis* (Pus.) Seav. Japanese name : Rokushogusa-rekinmodoki
2083 NI (Y. Kobayashi and Tubaki) From Oze-numa 1952
- Chlorosplenium aeruginosum* Oeder See *Chlorociboria aeruginosa*
- Clavaria mucida* Fr. Japanese name : Kiritake
3117 NI (Y. Kobayasi) From Hakone 1952
- Colletotrichum atramentarium* (B. et Br.) Traub.
4229 NARI (Kurata) Strain C-49 1952
- Colletotrichum gloeosporioides* Penz.
4230 NARI Strain C-52 (Kurata) 1952
- Colletotrichum glycines* Hori See *Glomerella glycines* (Hori) Lehman et Wolf.
- Colletotrichum lindemuthianum* (Sacc. et Magn.) Bri. et Cav.
4232 NARI Strain C-53 (Kurata) 1952
- Colletotrichum phomoides* (Sacc.) Chest.
4233 NARI Strain C. 14 (Kurata) 1952
- Colletotrichum rhoinum* F. Tassi See *Myxosporium rhois* Sacc.
- Copelandia papilionacea* (Fr.) Bres. (Syn.) *Paneolus papillionaceus* (Fr.) Japanese name : Warai-take
3118 NI (Y. Kobayasi) From Asakawa 1952
- Coprinus comatus* Fr. Japanese name : Sasakure-Hitoyotake
3133 NI (Y. Kobayasi) 1952
- Cryptococcus glabratus* Anderson See *Torulopsis glabrata* (Anderson) Lodder et de Vries
- Cryptomonas* sp.
A 014 TKTB (H. Ono) 1952
- Cryptoporus volvatus* (Peck) Hubbard (Syn. *Polyporus volvatus* Peck) Japanese name : Hitokuti-take
3119 NI (K. Kobayasi) From Simoda 1952
- Dipodascus albidus* Lagerh.
2087 NI (Y. Kobayasi) From Nippara 1952
- Draparnaldia glomerata* (Vauch.) Agardh
A 018 TKTB (H. Ono) 1952
- Endomyces bisporus* Beck See *Endomycopsis bisporus* (Beck) Dekker
- Endomyces fibuliger* Lindner See *Endomycopsis fibuliger* (Lindner) Dekker
- Endomyces javanensis* Klöcker See *Endomycopsis javanensis* (Klöcker) Dekker

- Endomyces lindneri* Saito See *Endomycopsis fibuliger* (Lindner) Dekker var. *lindneri* (Saito) Dekker
- Endomycopsis bisporus* (Beck) Dekker
7507 IFO 101 (Ec. 3); TEUH (Naganishi); CLMR-144; CBS (Beck) 1952
- Syn. *Endomyces bisporus* Beck
7505 OUT (Oda); CLMR-144; CBS (Beck) 1952
- Endomycopsis fibuliger* (Lindner) Dekker (Syn. *Endomyces fibuliger* Lindner)
7508 IFO 103 (Fc. 4); TEUH (Naganishi); CLMR-147 1952
- Endomycopsis fibuliger* (Lindner) Dekker var. *lindneri* (Saito) Dekker
7059 IFO 106 (Ec. 7); TEUH (Naganishi); CLMR-152 (Saito and Naganishi) 1952
- Endomycopsis fibuliger* (Lindner) Dekker var. *monospora* (Saito) Dekker
Syn. *Endomycopsis monosporus* Saito
7510 IFO 113 (Ec. 1); TEUH (Naganishi); OUT (Saito) 1952
- Endomycopsis javanensis* (Klöcker) Dekker
Syn. *Endomyces javanensis* Klöcker
7506 OUT (Oda); CLMR-151; Guilliermond 1952
- Endomycopsis monosporus* Saito See *Endomycopsis fibuliger* var. *monospora* (Saito) Dekker
- Euglena* sp.
A 015 TKTB (H. Ono) Strain (3) A. 15 1952
- Fistulina hepatica* Fr. Japanese name: Kanzô-take
3120 NI (Tubaki) From Natural Garden, Shirokane, Tokyo 1952
- Fusarium batatas* Wr. See *Fusarium bulbigenum* Cke. et Mass. var. *batatas* Wr.
- Fusarium bulbigenum* Cke. et Mass. var. *batatas* Wr. (Syn. *Fusarium batatas* Wr.) Japanese name: Tsuruware-byo
4225 PATU (Jôtani) From sweet-potato (*Ipomea batatas* Lam.) 1952
- Fusarium bulbigenum* Cke. et Mass. var. *lycopersici* (Brushi) Wr. (Syn. *Fusarium lycopersici* Brushi) Japanese name: Icho-byo
4226 PATU (Jôtani) From tomato (*Solanum lycopersicum* L.) 1952
- Fusarium bulbigenum* Cke. et Mass. var. *niveum* (E. Sm.) Wr. (*Fusarium niveum* E.F. Smith) Japanese name: Tsuruware-byo
4221 PATU (Jôtani) From a maskmelon 1952

- 4222 PATU (Jôtani) From *Cucumis sativus* L.
 4223 PATU (Jôtani) From *Luffa cylindrica* Roem. 1952
 4224 PATU (Jôtani) From *Citrullus battich* Forsk 1952
- Fusarium lycopersici* Brushi See *Fusarium bulbigenum* var.
lycopersici (Brushi) Wr.
- Fusarium niveum* E.F. Smith See *Fusarium bulbigenum*
 (E.F.Sm.) Wr.
- Gloeosporium kawakamii* Miyake
 4235 FES (Chiba) 1952
- Gloeosporium laeticolor* Berk.
 4236 NARI S-14 (Kurata) 1952
- Glomerella glycines* (Hori) Lehman et Wolf
 Syn. *Colletotrichum glycines* Hori
 4231 NARI (Kurata) Strain C-34 1952
- Gonium pectorale* Müller
 A 016 TKTB (H. Ono) 1952
- Hydnum repandum* Fr. Japanese name: Kanoshita
 3121 NI (K. Kobayasi) From Kôzu-bokujô 1952
- Hydnum repandum* Fr. var. *album* Quél. Japanese name:
 Shirokanoshita
 3122 NI (Kobayashi & Tubaki) From Ozenuma 1952
- Hygrophorus conicus* Fr. Japanese name: Aka-yamatake
 3123 NI (Y. Kobayashi & Tubaki) From Shima, Gumma
 Pref. 1952
- Itersonilia perplexans* Derx
 3124 NI (Tubaki) 1952
- Laetiporus sulphureus* (Fr.) Bond. et Singer var. *miniatus* (Jungh.)
 Imazeki
 3125 NI (Y. Kobayasi) From Hakone 1952
- Lasiosphaera nipponica* (Kawamura) Y. Kobayasi Japanese name:
 Onifusube
 3126 NI (Tsubaki) From Hamarikyû 1952
- Merulius tremellosus* Fr. Japanese name: Shiwatake 1952
 3217 NI (Y. Kobayashi & Tubaki) From Ozenuma 1952
- Microthamnion kuetzingianum* Nägeli
 A 022 TKTB (H. Ono) 1952
- Candelospora penicilloides* Tubaki
 4228 NI (Tubaki) From the dead leaf of Hachijô 1952

- Mucor lamprosporus* Lendner
1258 NI (Tubaki) From the soil of Mt. Fuji 1952
- Mucor recurvus* E.E. Butler
1259 University of Minnesota (E.E. Butler) Isolated from diseased roots of strawberry (*Fragaria* spp.) Lit.:
Mycologia Vol. 44, p. 591, 1952 1952
- Mycena haematopus* (Fr.) Quél. Japanese name; Chishio-take
8128 NI (Y. Kobayasi & Tubaki) From Ozenuma 1952
- Myxosporium rhois* Sacc. (*Collectotrichum rhoinum* F. Tassi)
4237 FES (O. Chiba) 1952
- Neurospora crassa* Shear et Dodge
2075 ECU (Minoura) Inositless strain 4-25, induced by mustard gas 1952
2076 ECU (Minoura) Inositless mutant 5-71, induced by mustard gas 1952
2077 ECU (Minoura) Inositless mutant 7-330, induced by butylmustard 1952
2078 ECU (Minoura) Inositless mutant 7-366, induced by butylmustard 1952
- Pandorina morum* Bory
A 017 TKTB (H. Ono) Strain A. 75 1952
- Paneolus papilionaceus* (Fr.) Quél. See *Copelandia papilionacea* (Fr.) Bres.
- Paneolus retirugis* (Fr.) Gill. Japanese name: Saigyô-gasa
3129 NI (Y. Kobayasi) From Kôzu-bokujô 1952
- Penicillium cyclopium* Westling
6293 FES (Kawada) From forest soil 1952
- Penicillium luteum* Zukal
6292 ACTU (Iizuka); ARCC 9744; Harvard University S. N. 41 (W.H. Weston) For test of mildewproofing 1952
- Pestalotia lupini*
4238 NARI P-9 (Kurata) 1952
- Pestalotia shiraiana* P. Henn.
4239 FES (Laboratory of Forest Pathology) 1952
- Pleurotus spodoleucus* (Fr.) Quél. Japanese name; Kantake or Fuyu-hiratake
3130 NI (Y. Kobayasi) From Ozenuma 1952

- Polypilus frondosus* (Fr.) Karst. (Syn. *Polyporus frondosus* Fr.)
 Japanese name : Maitake
 3131 NI (Y. Kobayasi & Tubaki) From Ozenuma 1952
- Polyporus frondosus* Fr. See *Polypilus frondosus* (Fr.) Karst.
- Polyporus volvatus* Peck See *Cryptoporus* (Peck) Hubbard
- Poria cocos* Wolf Japanese name : Buku-ryô
 3132 NI (Y. Kobayasi) 1952
- Protoderma viride* Kützing
 A 021 TKTB (H. Ono) 1952
- Protosiphon botryoides* (Kütz.) Klebs
 A 006 TKTB (H. Ono) Strain A. 88 1952
- Psalliota silvicola* Roll. See *Agaricus silvicola* (Vitt.) Sacc.
- Pyronema confluens* Tul. See *Pyronema omphalodes* (Bull.) Fuckel
- Pyronema omphalodes* (Bull.) Fuckel (Syn. *Pyronema confluens* Tul.)
 2085 NI (Y. Kobayasi & Tubaki) From Shima; Gumma
 Pref. 1952
- Sepedonium crysospermum* (Bull.) Fr.
 4227 NI (Y. Kobayasi) On the fruitbody of *Boletus*,
 Mt. Hakkôda 1952
- Stigeoclonium* spp.
 A 019 TKTB (H. Ono) Strain 2 1952
 A 020 TKTB (H. Ono) Strain 3 1952
- Streptomyces abikoensis* Okami et Umezawa
 9092 NIHJ (Okami) Strain Z-1-6
 Production of abikoviromycin 1952
- Streptomyces fradiae* (Waksman et Curtis) Bergey et al.
 9091 NIHJ (Okami) Strain 260
 Production of streptothricin B 1 1952
- Streptomyces griseus* (Krinsky) Bergey et al.
 9087 HIHJ (Okami) Strain 127-1
 Production of streptomycin 1952
 9088 NIHJ (Okami) Strain 0-12
 Production of grisein 1952
 9089 NIHJ (Okami) Strain 0-18
 Production of grisein 1952
 9089 NIHJ (Okami) Strain 0-18
 Production of grisein 1952
- Streptomyces griseus* (Krinsky) Bergey et al. var. *rhodochrous* Okami
 et Umezawa

- 9090 NIHJ (Okami) Strain SN. J 1952
Streptomyces rubescens (Jarach) Bergey et al. (*Streptothrix rubescens* Jarach)
 9093 NIHJ (Y. Okami) Strain Z-5-2 1952
 Production of abikoviromycin
Torulopsis glabrata (Anderson) Lodder et de Vries
 Syn. *Cryptococcus glabratus* Anderson
 7503 IFO 5 (Tp. 38); TEUH (Naganishi); University of Illinois (Tanner) 1952
Torulopsis lactica Hongo
 7504 IFO 432 (Tp. 1); ACTU (Sakaguchi) (Lit.: Jour. Agric. Chem. Soc. Japan (Nippon Nôgeikwagaku-Kwaishi) 16 (No. 11) 1917, 1940) 1952
Trichocoma paradoxa Junghuhn
 2079 NI (Y. Kobayasi) From Enoshima 1952
 2080 NI (M. Ôkubo) From Hachijô 1952
 2081 NI (Y. Kobayasi) From Yakushima 1952
 2082 NI (M. Soneda) From Ôiso 1952
Xylaria polymorpha (Pers.) Grev.
 2086 NI (Y. Kobayasi) From Yugashima, Izu 1952

Notice: All specific or subspecific epithets in the List are written with a small initial letter, in agreement with the International Code of Bacteriological Nomenclature and the International Rules of Botanical Nomenclature.

The Recommendation 27 g of the Bacteriological Code states "Specific epithets, even those derived from names of persons, should not be capitalized",

And the Recommendation XLIII of the Botanical Code amended by the 7th International Botanical Congress at Stockholm, runs as follows: "All specific and trivial names or epithets should be written with a small initial letter, although writers desiring to use capital initial letters for particular names or epithets may do so when these are directly derived from the names of persons (or deities) or are vernacular (or barbaric) names, or are previously published (including pre-Linnean and invalid) unmodified generic names."

—→ Continued to page 29

菌類談話會記事

Notes from the Mycology Discussion Group of Japan

隠花植物研究會の思出

昭和14年(1939)に三省堂から朝比奈泰彦博士監修の下に日本隠花植物圖鑑が出版された、今から見れば、この書は間違ひも多く種類も少く幼稚なものであるが、併し當時色々な意味で研究が活潑に行はれず、数少い研究者がコソコソと日陰者のような研究を続けていた日本の隠花植物學界にとつて、この圖鑑の出版は劃期的な意義があつたといえるであろう。これを機縁として、隠花植物という大きな連がりの下に、何か氣勢をあげようとの下心もないではなく、お互に専門分野は違つても、菌、藻、地衣、蘚苔などが手を握り合つて、隠花植物の發展の爲に進まうといつた氣運が次第に昂まつて來た。こうして生れたのが隠花植物研究會である。もちろんこれは、全國の同志に呼びかけるという程の大きなものではなく、在京研究者の同志的な集まりであつたが、昭和17年の早春に第一回の集まりを神田の學士會館の小集會室で行つた。朝比奈博士を顧問格とし、佐藤正己(地衣)、今關六也、印東弘玄(菌)、瀨川宗吉、岡田喜一(藻)、江本義數、安部世意治(變形菌)などが創立當時のメンバーである。その後毎月一回、學士會館、茗溪會館、東京科學博物館(今の國立科博)などに集まり、新しい研究、知見を發表し、新文献を紹介し、採集談をなし、和氣あいあい談笑の中に知識の交換、親睦を圖つていた。時々上京される地方の同志を迎えて會を開いたこともある。その後、この會に迎え、また加入を申込みれた方も次のように幾人かあつた。即ち櫻井久一(蘚)、服部新佐(苔)、高木正典(蘚)、森岡(加崎)英男(車軸藻)、根來健一郎(藻)などである。かくして會そのものは一步一步緊密な提携の下に發展し、燈下管制下で會を開いたこともあつたが、戦争は益々緊迫化し、また會員の佐藤氏がジャバに、瀨川氏が九大に、安部氏の逝去などの異變がおこり、會の繼續も困難となるままに、中絶するの止むなきに至つた。戦争異變のため會の記録が逸散して、具體的な記事が書けないが、多分昭和10年6月、茗溪會館の集まりを最後として終つたことのように思はれる(今關記)。

菌類談話會の生ひ立ち

斯くして終戦となり、更にそれに續く數年間の“Chaos”から漸く醒へり、外地に居つた者も身一つで内地に迎り着き、細細ながら生きられるという淡い希望が我我菌類學徒の心に湧いて來たとき、先づ我々の胸に去來したのは、數年間に殆ど荒廢した研究生活を如何にして回復し、續けて行くべきかということであつた。7-8年に互る我々の鎖國時代に諸外國で研究された業績の一部分を占領軍當局の好意で見ることが出来るようになった時の喜びは忘れることが出来ない。そのうちに我々個人で歐米の學者と交通し、文献などを入手する者も出來て來た。これらを持ちよつて一刻でも早く最近の菌類學界の水準を知り、互に協力して研究の實を擧げたいとの志を同じくする者が數名集つて第一回の會合を開いたのが昭和25年1月のことである。場處は科博の小林研究室、集る者は今關、印東、平塚、青島、小林等であつた。その後毎月一回づゝ會を重ねるうちに大體の方向も定まつて來た。つまり互の負擔にならぬ程度の軽い會合で、菌類に關する研究慾のある者は誰人でも加はつて戴くこと、毎月第事、會場は持ちまはり、外國の新刊書、論文などの抄讀、各自の研究の速報、あとは雜談と云ふ風であつたが、そのうち草野、小南、中澤、江本、富樫博士等の老大家や根平、寺本、棒氏等の若手がレギュラーメンバーとして參加され、また醫學、細菌學關係の方々や、服部廣太郎、朝比奈泰彦、藪田貞次郎、三宅世博士等も出席され、随時に地方在住の齊藤賢

道、逸見武雄、西門義一、亀井専次、岩出玄之助、今井三子、佐藤正己諸博士も顔を出されると云う工合に我我菌叢は自然に擴大せられ、所謂 Teens をやつと越へたばかりの若者から古稀を過ぎてなほ御元氣な老大家に至るまで菌類の縁で結ばれる儘に集ひ合ひ、自ら進んで論文の發表、抄讀などを申込む面々が多く、時には飛び入りで一席賓じたり同輩談で若者等の目を醒かせたりすることも屢々で、何かこうお互ひに生き甲斐を感じるような暖かい活氣に満ちた會合となつた。會場は日黒の林業試験場大塚の教育大理學部、澁谷の教育大農學部、長尾研究所、東大農學部、科學博物館等、で時には程ヶ谷の横濱國立大農學部、淺川の林業試験場分室等が用ひられた。26年春にはこの談話會への勸誘狀を刷つて菌類關係の方へ送つたこともある。その前文をこゝに引用して見る。



Fig. 82 1952年6月 淺川林業試験場分室にて行はれた菌類談話會の集ひ、右より今岡、江本、平塚、印東、西門、小林、椿、大久保、草野、倉田、小南、寺本、今井、服部、學生某君

「菌類談話會より皆様へ：在京の私共菌類學徒の間にセミナリーの如きものを始めようではないかとの話が持上つたのは戦争の傷手もまだ身に沁みて居つた一昨年の事ではありますが昨年の初め漸く10名足らずの者で第1回の菌類談話會が催されました。その席での一同の意見として時間的にも經濟的にも大して負擔にならない集りであること、嫌になつたら無理して繼續する必要はないという氣儘な申し合せを致しました。その後毎月1回適當な日に會場、世話人も廻り持ちで主に外國の菌類論文等の抄讀及び内外の菌類ニュースの紹介等を行ひ、あとは勝手な放言、氣焔でアットホームな一時を過す事を例とするうちに、いつしか一年餘りが過ぎ去りました。……今時戦時中の傷手を云々するのは即ち我々の不勉強を自答する結果になりますから、これには餘り觸れません。しかし菌類學という學問が我國の學術制度の缺陷に災されて、發達が阻まれて居ると見るのは強ち私共の僻見のみとは申されぬようです。それやこれやの理由で菌類談話會の如きものも一應存在理由が出来て來た譯でせう。私共の中にはボスは居りません。セクトもありません。随つて出身は問題ではありません。半白、光頭組より所謂フレッシュユマンに至るまで年齢を問はず、菌類に學問的興味のある連中が互に勵まし研究し協力して行かうと云う意慾によつてつながれているグループであります。廣い意味の菌類の系統、種、品種等に關心のある方方で私共のグループに加はつて戴く事がお互にプラスになるような方でしたら、喜んで手を握り合ひ度いと思ひます。殊に遺傳、醗酵關係、醫科（例へば皮膚病科）關係の方方の御參加を切望する次第です。……地方在住の皆様、御上京の節には私共のうち誰へなりとも一應御連絡賜らんことを切に御願ひ申し上げます。それによりなるべく皆様に加はつて戴ける有意義な會合が持たれる譯であります」

26年4月には談話會が後援者となり植物學會東京支部の大會に菌類シンポジウムが行はれた。菌類學用語の整理も徐々ではあるが進みつつある。また分類學會の依頼で菌類科名の和名選定の原案

も製作した。更に機關雜誌發行が我々の念願であるが、一應の處置として今回より長研の厚意により談話會の記事を載せることが出来るようになった。しかしその反面、27年7月には熱心な同人であつた富樫博士を失つたことは我々にとつて、大きな傷手であつた(小林 記)。

現在の會員：青島清雄・今關六也・印東弘玄・江本義數・草野俊助・小林義雄・小南 清・佐々木(寺本)敏雄・椿啓介・土岐晴一・服部廣太郎・平塚直秀

客員：伊藤一雄・今井三子・岩出玄之助・逸見武雄・三宅勉・中澤亮治・長谷川武治・根平武雄
倉田浩・齊藤賢道・藪田貞次郎・朝比奈泰彦・佐藤正己・澤田滿喜 等

將來への希望

先づ我々は從來のセクト化された菌類學研究機關の中に横の連絡を持ちたい。日本の菌類學は多くの分野に分れた儘互の連絡も少く延びつゝある。曰く、大學の農藝化學或は醸造學教室を出發點とする醱酵菌學、農學部の植物教室より始まる植物病理學、醫學部の皮膚科教室よりの人體寄生菌學、同じく醫學部の細菌又は衛生教室よりの細菌學、醫學部藥學教室に於ける菌類學、更に理農醫の協力になる抗菌性菌學等である。これらの各機關で互に似通つた研究が異つた名目の下に行はれてゐることが少くない。

次に我々は菌類分類學を基礎とする純粹菌類學を一層振興したい。すべての應用菌學の基礎は研究材料となるべき我々の周圍の菌類を委しく調査し、その合理的な分類上の位置を研究し、正しい種名を定めることから始まる。これに關しては獨り菌類分類學者の力のみでなし得べきことではない。菌種を記載するにはそれに關する生理、生態、遺傳、形態等に關する知識の總合が重要であるから随つてこれらの基礎研究を行つてゐる學者の協力が必要とする。野外に於ける菌の採集から始まつて、標本の製作と整理、外國との菌株或は菌標本の交換、培養菌株の保存、正常な手續による發表、系統の研究、變異、遺傳の研究等の一貫した研究機構の整備が望ましい。しかし應用の基礎となるべき純粹菌類學の育ての親は日本では何處に求むべきであらうか、純理を追求すべき大學の理學部には微生物學教室も菌類學教室と稱するものもなく僅數の植物學教室の一隅で菌類學の講義が行はれて居るに過ぎない。菌類學の内容は動物學や植物學等と同様に豊富であるにも拘らず、斯る現状であるから、種類が多い日本の菌類フロラは未知の部分が多く、その調査の程度は顯花植物フロラで申せば50年前の狀況である。抗菌性菌が外國で發見されれば、先づその株を輸入することに大きな努力が拂はれ、*Neurospora* 屬の菌による遺傳研究がアメリカで進められると、同じ株による追試の如きものが行はればじめる、しかも日本には遺傳研究に好適と思はれる菌が澤山あるにも拘らず見逃されてゐる狀態である。資源は外國に、加工は日本で云う日本經濟の宿命的の事實が、皮肉にも菌類資源の乏しさからではなく研究機構の不完全のために菌類研究の面にも當てはまるのでは、なさけない次第ではないか。

最後に、……と云うと何か菌類研究所設置の試案でも持ち出しさうであるが、今はこれには觸れない。實は研究機關の問題も非常に重要であるが、何と云つても先づ人の和である。各方面の菌類研究者同志が互に協力して、しかも楽しく研究を進めて行くことは出来ないものであらうか。我々は時々そう思ふことであるが、アメリカの菌類學會で毎年行はれる Fungus-Foray の記事や參加者の記念寫眞を見ると、研究とその研究者の家庭生活とがうまく融和して、和氣あいあいとした氣分が同はれて、如何にもうらやましい(會員有志記)。

菌類科の和名表

菌類談話會は植物分類學會の依頼により1950年來菌類科名整理資料及び菌類科名に関する標準和名表を製作中であつたが1952年10月に分類學會に對して我々の結論を呈出し、一應責任を果たした譯であり、この和名表は近く分類學會の事業として公表されると思はれる。この中に選擇した科は大體教科書に屢々出て來る科を中心とし、特殊なもの、外國產のもの、新設の科などは除いた。この原案作成に際し、我々は今迄に有効に發表せられ問題となる科を殆んどすべて挙げ、一應分類の順序に排列し、その各に和名を與へた。この勞作は同學諸氏の批判に供した方がよいと思はれるので、茲に發表する次第である。

○科の排列、科の撰擇は必ずしも一貫した系統を現しているものではない、Martin (1940) のシステムを基とし、特殊のグループに關しては次の文献を參考とした。

1. Martin: Outline of the Fungi (1940)
2. Gäumann: Die Pilze (1949)
3. Sparrow: Aquatic Phycomycetes (1943)
4. Naumov: Clés des Mucorinées (1939)
5. Dodge: Medical Mycology (1935)
6. Miller: A revision of the classification of the Ascomycetes with special emphasis on the Pyrenomycetes, in Mycologia 41 (1949)
7. Martin: The Tremellales of the North Central United States and adjacent Canada (1944)
8. Bondarzew & Singer: Zur Systematik der Polyporaceen, in Ann. Mycol. 39 (1941)
9. Singer: Das System der Agaricales in Ann. Mycol. 34 (1936)
10. Singer: The Agaricales in Modern Taxonomy (1951)
11. Zeller: Keys to the Orders, Families and Genera of the Gasteromycetes, in Mycologia 41 (1949)

○菌類の科は顯花植物のそれとは異つて、原科名の音讀みの方が通りがよいことが普通であるから、既に和名の與へられているものでも、それを採用しなかつたものが多い。

○同一科に二つ以上の和名のある場合、必ずしもその先取權を問題にしては居らない。

○從來、植物病理學より由來した和名で○病菌科というのが少からずあるが、その“病”は出来る限り除いた。

○藻菌類、子囊菌類中には伊藤誠哉博士の新造語が少なからずある。

○この表の原案は下記の者で分擔し、更に談話會員で討議し、分類學會員有志の意見も容れて作つたものである。

變形菌類	江 本	銹菌類	平 塚
藻菌類	印 東	擔子菌類(除銹菌)	今關, 小林
子囊菌類	小 林	不完全菌類	今 關

○各和名の末尾に印刷すべき“科”は省略す。

變形菌類

Guttulinaceae	グツツリナ
Acrasiaceae	アクラシア
Dictyosteliaceae	デイクチオステリア
Labyrinthuraceae	ラビリンスラ
Plasmodiophoraceae	プラズモディオフオラ
Amaurochaetaceae	アマウロケーテ
Arcyriaceae	アーキリア
Ceratiomyxaceae	セラチオミクサ
Colodermaceae	コロデルマ
Didymiaceae	ヂヂミウム
Heterodermaceae	ヘテロデルマ
Liceaceae	リケア
Lycogalaceae	リコガラ
Margaritaceae	マーガリタ
Physaraceae	フィザルム
Reticulariaceae	レチクラリア
Stemonitaceae	ステモニチス
Trichiaceae	トリキア
Tubulinaceae	チュブリナ

藻菌類

Olpidiaceae	ツボカビ
Achlyogetonaceae	アクリオゲトン
Synchytriaceae	サビツボカビ
Phlyctidiaceae	フリクティデイウム
Rhizidiaceae (<i>Sporochytriaceae</i> , <i>Rhizophlyctaceae</i>)	ネツキツボカビ
Cladochytriaceae	エダツボカビ
Physodermataceae	フィゾデルマ
Chytridiaceae (<i>Chytriaceae</i>)	キトリデイウム
Nowakowskiellaceae	ノヴァコウスキエラ
Hyphochytriaceae	ヒフオキトリウム
Rhizidiomycetaceae	リジデイオミセス
Anisolpidiaceae	アニソルピデイウム
Catenariaceae	カテナリア
Blastocladiaceae	コウマクノウキン
Coelomomycetaceae	シイロモミセス
Monoblepharidaceae	モノブレファリス

Ectrogellaceae	エクトロゲラ
Thraustochytriaceae	スラウストキトリウム
Saprolegniaceae	ミズカビ
Leptomitaceae	フシミズカビ
Rhipidiaceae	オオギミズカビ
Pseudolpidiaceae (<i>Olpidiopsidaceae</i>)	ツボカビモドキ
Sirolpidiaceae	シロルピデイウム
Lagenidiaceae	クリリツボカビ
Pythiaceae	ビチウム
Peronosporaceae	ツユカビ
Albuginaceae	シロサビキン
Mucoraceae	ケカビ
Pilobolaceae	ミズタマカビ
Thamnidaceae	エダケカビ
Mortierellaceae	クサレケカビ
Kickxellaceae	キツクセラ
Cepharidaceae (<i>Piptocepharidaceae</i>)	エダカビ
Cunninghamellaceae	クズタマカビ
Spinaliaceae	スピナリア
Zoopagaceae	ゾウパガス
Harpellaceae	ハアペラ
Genistellaceae	ゲニステラ
Endogonaceae	エンドゴウン
Entomophthoraceae	ハエカビ
Basidiobolaceae	バンデイオボウルス
Ancylistaceae	クサリカビ
Taeniellaceae	テーニエラ
Arundinulaceae	アルンデイヌラ
Eccrinaceae	エツクリナ
Amoebidiaceae	アムービデイウム

子 嚢 菌 類

Spermophthoraceae	スペルモフトラ
Ashbyaceae	アシュビア
Pichiaceae	ビキア
Ascoideaceae	アスコイデア
Endomycetaceae	エンドミケス
Dipodascaceae	ディポードアスクス

Coccidioideaceae	コツキデイオイデア
Eremascaceae	エレマスキス
Saccharomycetaceae	サツカロミケス
Protomycetaceae	プロトミケス
Ascocorticiaceae	アスコルテイシウム
Taphrinaceae (<i>Exoascaceae</i>)	タフリナ
Gymnoascaceae	ギムノアスキス
Aspergillaceae	コウジカビ
Monascaceae (<i>Eurotiaceae</i>)	ベニコウジカビ
Onygenaceae	ホネタケ
Trichocomaceae	マユハキタケ
Elaphomycetaceae	ツチダンゴ
Erysiphaceae	ウドンコカビ
Meliolaceae	メリオラ
Englerulaceae	エングレルーラ
Atichiaceae	アチキア
Myriangiaceae	ミリアンギウム
Elsinoaceae	エルシノイ
Saccardiaceae	サツカルド
Dothioraceae	ドチオラ
Hypocreaceae	ニクザギン
Melanosporaceae	メラノスボラ
Chaetomiaceae	ケートミウム
Sordariaceae (<i>Fimetariaceae</i>)	ソルダリア
Clavicipitaceae	バクカクキン
Sphaeriaceae	スファイリア
Ceratostomataceae	ケラトストマ
Cucurbitariaceae	クウクルビタリア
Amphisphaeriaceae	アムヒスファイリア
Mycosphaerellaceae	ミコスファイレラ
Clypeosphaeriaceae	クリベオスファイリア
Diaporthaceae (<i>Valsaceae</i>)	バルサ
Allantosphaeriaceae (<i>Diatrypaceae</i>)	シトネタケ
Phyllachoraceae	クロカワカビ
Melogrammataceae	メログラムマ
Xylariaceae	マメザヤタケ
Capnodiaceae	カプノデイウム
Pseudosphaeriaceae	タマカビモドキ

Coryneliaceae	コリネリア
Dothideaceae	ドチデア
Dichaenaceae	デイカイナ
Hysteriaceae	ヒステリウム
Acrospormaceae	アクロスペルマ
Stigmatiaceae	スチグマテア
Polystomellaceae	ポリストメラ
Micropeltaceae (<i>Hemisphaeriaceae</i>)	ミクロベルテイス
Trichopeltaceae	トリコベルチス
Trichothyriaceae	トリコチリウム
Thryptosporaceae	トリプトスボラ
Microthyriaceae	ミクロチリウム
Lophiostomataceae	ロフイオストマ
Ostropaceae	オストロパ
Patellariaceae	パテラリア
Dermateaceae	ヘソタケ
Phacidiaceae	ファキデイウム
Orbiliaceae	オルピリア
Hyaloscyphaceae	ヒアロスキファ
Helotiaceae	ヘロテイウム
Cyttariaceae	キツタリア
Sclerotiniaceae	キンカクキン
Bulgariaceae	ゴムタケ
Geoglossaceae	テングノメンガイ
Rhizinaceae	ツチクラゲ
Pyronemataceae	ピロネマ
Ascobolaceae	スイライカビ
Pezizaceae	チヤワンタケ
Sarcosomaceae (<i>Sarcoscyphaceae</i>)	オホゴムタケ
Helvellaceae	ノボリリヨウタケ
Geneaceae	イモタケ
Eutuberaceae	カイキン
Terfeziaceae	テルフエチア
Peyritschiellaceae	ベイリツチエラ
Laboulbeniaceae	ラブウルベニア
Ceratomycetaceae	ケラトミケス
Zodiomyetaceae	ゾウデイオミケス

擔 子 菌 類

Melampsoraceae	メラムブソラサビキン
Pucciniaceae	サビキン
<i>Uredinales Imperfecti</i>	銹型不完全菌
Ustilaginaceae	クロボキン
Tilletiaceae	ナماغサクロボキン
Graphiolaceae	グラフイオラ
Tulasnellaceae	ツラスネラ
Ceratobasidiaceae	ツノタンシキン
Vuilleminiacae	ブイレミニア
Brachybasidiaceae	クビレタンシキン
Dacrymycetaceae	ベニキクラゲ
Sirobasidiaceae	ジユズタンシキン
Tremellaceae	シロキクラゲ
Hyaloriaceae	スイシヨウキン
Auriculariaceae	キクラゲ
Cystobasidiaceae	フクロタンシキン
Septobasidiaceae	モンパビヨウキン
Phleogenaceae	トメバリキン
Sporobolomycetaceae	スボロボロミケス
Exobasidiaceae	モチビヨウキン
Cantharellaceae	アンズタケ
Hydnaceae	ハリタケ
Phyllacteriaceae (Boletopsidaceae)	シシタケ
Clavariaceae	ホウキタケ
Polyporaceae	リルノコシカケ
Cyphellaceae	フウリシタケ
Fistulinaceae	カンゾウタケ
Corticaceae	コウヤクタケ
Coniophoraceae	イドタケ
Hypochnaceae	クズワタタケ
Meruliaceae	シワタケ
Strobilomycetaceae	オニイグチ
Boletaceae	アミタケ
Gomphidiaceae	クギタケ
Paxillaceae	ヒダハタケ
Jugasporaceae	カブウラベニタケ
Leptotaceae	アミヒダタケ

Radulaceae	オクバタケ
Hygrophoraceae	アカヤマタケ
Russulaceae	ベニタケ
Rhodogoniophoraceae	イツボンシメジ
Tricholomataceae	シメジ
Amanitaceae	テングタケ
Leucocoprinaceae	カラカサタケ
Coprinaceae	ヒトヨタケ
Strophariaceae	モエギタケ
Cortinariaceae	フウセンタケ

Hymenomycetinae の従来分類

Exobasidiaceae	モチビヨウキン
Hypochnaceae	クズワタタケ
Thelephoraceae	イボタケ
Clavariaceae	ホウキタケ
Hydnaceae	ハリタケ
Polyporaceae	サルノコシカケ
Agaricaceae	マツダケ

Protogastraceae	プロトガスター
Hemigastraceae	ヘミガスター
Gasterellaceae	ガステレラ
Melanogastraceae	メラノガスター
Rhizopogonaceae	シヨウロ
Hymenogastraceae	ヒメノガスター
Hydnangiaceae (<i>Asterogastraceae</i>)	ヒドナンギウム
Gautieriaceae	ゴウチエリア
Tremellogastraceae	トレメログスター
Gastrosporiaceae	ガストロスポリウム
Hysterangiaceae	ヒステランギウム
Protophallaceae	プロトファルス
Gelopellaceae	ゲロベラ
Claustulaceae	クラウスツラ
Phallaceae	スツボンタケ
Clathraceae	カゴタケ
Arachniaceae	クモノコタケ
Lycoperdaceae	ホコリタケ
Broomeiaceae	シヤカトウタケ
Mycenastraceae	トゲイトタケ

Mesophellaceae	メソフェラ
Geastraceae	ヒメツチグリ
Sclerodermataceae	ニセシヨウロ
Sedeculaceae	セデクラ
Pisolithaceae	コツブタケ
Glischrodermataceae	カタカワタケ
Tylostomataceae	ケシボウズタケ
Astraeaceae	ツチグリ
Calostomataceae	クチベニタケ
Nidulariaceae	チヤダイゴケ
Sphaerobolaceae	タマハジキタケ
Secotiaceae	セコチウム
Podaxaceae	ナガエホコリタケ

不 完 全 菌 類

Sphaerioidaceae (<i>Phyllostictaceae</i>)	スファイリオイド
Stephanothecaceae	ステファノセイカ
Nectrioidaceae (<i>Zythiaceae</i>)	ネクトリオイド
Leptostromataceae	レプトストローマ
Excipulaceae	エクシブラ
Melanconiaceae	メランコニア
Rhodotorulaceae	ロドトルラ
Torulopsidaceae	トルロブシス
(上二科を合せて <i>Cryptococcaceae</i>)	
Mucedinaceae	スボロトリクム
Moniliaceae	モニリア
Dematiaceae	デマチウム
Stilbellaceae (<i>Stilbaceae</i>)	クモタケ
Tuberculariaceae	ツベルクラリア
<i>Sterile mycelia</i>	菌絲型不完全菌

編集後記：本號は既に11月末に編集を完了し12月初に印刷へまはしたのであるが、出版社の手遅により非常に完成が遅れた。第3號は3月末迄に編集し、5月頃世に出す豫定であり、原稿の出来上つて居るものも數篇ある。2-3號と號を重ねるうちに編集方針と云ふものも定まらると思ふ。また長研内の研究に限らず、廣く各方面よりの有能な研究成果を載せ、及ばずながら世界の菌類學會に貢獻したい。今迄にアメリカの菌類學會の前會長 Martin 氏、イギリスの Commonwealth 菌類研究所をはじめ、歐米に於ける菌類學者、學會よりの購讀申込みも來つたあり、Mycologia, Lloydia, Farlowia, Elisha Mitchell Scientific Society の Journal, University of Iowa Studies 等斯學關係の出版物の交換應諾もある。

長尾研究所は毎週火曜日に全員が顔を合せ、仲々にぎやかである。菌類學關係者の御來訪を喜んでお待ちする。アスキスと並んで(長研)(長歌研精會ではない)の看板が出ている。

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